

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's fee reference D-17058...	FOR FURTHER ACTION see Form PCT/ISA/220 as well as, where applicable, Item 5 below	
International application No. PCT/US2005/012197	International filing date (day/month/year) 08/04/2005	(Earliest) Priority Date (day/month/year) 08/04/2004
Applicant MEADWESTVACUUM PACKAGING SYSTEMS LLC		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 2 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

a. With regard to the language, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ The international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

b. ☐ With regard to any nucleotide and/or amino acid sequence disclosed in the international application, see Box No. I.

2. ☐ Certain claims were found unsearchable (See Box II).

3. ☐ Unity of invention is lacking (See Box III).

4. With regard to the title,

☒ the text is approved as submitted by the applicant.

☐ the text has been established by this Authority to read as follows:

5. With regard to the abstract,

☒ the text is approved as submitted by the applicant.

☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. With regard to the drawings,

a. the figure of the drawings to be published with the abstract is Figure No. 1A.

☒ as suggested by the applicant.

☐ as selected by this Authority, because the applicant failed to suggest a figure.

☐ as selected by this Authority, because that figure better characterizes the invention.

b. ☐ none of the figures is to be published with the abstract.

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7	B6505/50	B6505/22	B6505/46	B6505/44	B65071/00
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Keywords: Information; Internet; Knowledge; Health; Quality of life; Health; Hospital; Chronic disease; Health

B. FIELDS SEARCHED

Maximum degree of association is searched (classification system) followed by classification symbol.

IPC 7 0050

The government agrees that from 1990, the competition to the extent that such a market can be created in the field of research

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EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category ¹⁰	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No
X	GB 406 511 A (KENNETH JAMES MARDON) 1 March 1934 (1934-03-01)	1-4,7,8, 11,14
Y	page 2, lines 46-127; figures 4,5 -----	12,13
X	CH 93 304 A (PERRET, HORACE) 16 May 1922 (1922-05-16)	1-4,7,8, 10,11,14
	page 1, column 2; figures 2,4 -----	
Y	US 5 842 568 A (CHANG-WEN ET AL) 1 December 1998 (1998-12-01)	12
	figure 2 -----	
Y	US 1 960 947 A (LAUTH EDWARD J ET AL) 29 May 1934 (1934-05-29)	13
	figures 2,8 -----	

Figures 10 and 11 show the dependence of $\log \epsilon$ on $\log \omega$.

☐ **Parents strongly disagree** (see below for details)

* Special categories of cited documents

A document defining the general state of the art which is not considered to be of particular relevance.

* Earlier document but published on or after the international filing date.

1. Document which may throw doubt on priority, date, or which is cited to establish the publication date of another citation or other special reason (e.g., specimen)

*"Other" documents referring to an oral disclosure, use, exhibition or other means.

*¹ document published prior to the international filing date but later than the priority date claimed.

* later document published after the international filing date or priority date and not in conflict with the application submitted to understand the principles or theory underlying the invention.

X document of particular relevance, the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone.

"(v) document of prior art relevance, the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

8 documented members of the same patient family

Date of the actual completion of the international search

© 2005

Date of making of the international search report

17/08/2005

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Jerveund, 81

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
GB 406511	A	01-03-1934	NONE	
CH 93304	A	16-05-1922	NONE	
US 5842568	A	01-12-1998	NONE	
US 1960947	A	29-05-1934	NONE	

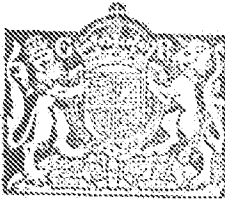
RESERVE COPY PATENT SPECIFICATION

Application Date: May 26, 1931. No. 16,662/31.

372,119

Complete Left: Feb. 10, 1932.

Complete Accepted: May 5, 1932.



PROVISIONAL SPECIFICATION.

Improvements in Cardboard or like Containers for Articles of Merchandise.

We, **EDMUND CORRIGAN & CO. LTD.**, of **10, N.W.10, England**, do hereby declare the nature of this invention to be as follows:—

This invention relates to cardboard or like containers for articles of merchandise and its object is to provide a container of improved construction which will be pillar-proof, that is to say, will permit the articles contained in it to be visible, while positively preventing their removal without damage to the container or its closure. For convenience in describing the invention the articles are hereinafter referred to as bottles or the like, but it is to be understood that with slight constructional modifications containers according to the invention may be adapted for the storage and transport of many other kinds of articles, for example, eggs, electric lamps, pencils with sharpened ends, or in fact any articles having parts of smaller and larger girth.

According to the invention the pillar-proof container for bottles and like articles of merchandise comprises a casing having an open top and an apertured partition through which the articles may severally project and/or be visible, and means for positively locating the partition and enclosing the bottles between it and the bottom of the casing.

The partition is preferably separate from the casing. It may be therein constrained in one direction by abutments formed by turning in two or more walls of the container upon themselves, and in the other direction by the larger parts of the bottles, which rest upon flaps integral with the casing and turned inwards to constitute the bottom thereof.

It is an advantage of the container that the walls of the casing may extend to a greater height above the partition than the necks of the bottles projecting through it, so that they are protected.

In one form of the invention the apertured partition may constitute one end of a crate-like structure in which articles may be placed. The filled crate may then

be inserted in a casing with its apertured end against abutments adjacent the open top thereof and secured within the casing by closing and sealing flaps integral with the casing and constituting its bottom.

In another form of the invention which may be of particular use where the articles themselves are not capable of maintaining the apertured partition in its position against the abutments, any or all of the edges of the partition may be turned and extended along the walls of the container to abut the inwardly turned flaps constituting the bottom thereof and so hold the partition against the abutments adjacent the open end of the casing.

In order that the nature of the invention may be fully understood an embodiment will now be described by way of example.

A rectangular open ended casing of cardboard or like material has its walls severally extended upwards and downwards beyond the length of the bottles to be held in the container of which the casing is to form a part. The upward extensions of the walls are turned in upon themselves, thus leaving the top of the casing open. The lower extensions are suitably shaped into flaps which may be turned inwards and sealed to close the completed container after it has been filled. A strip of cardboard or like material is divided by two creases into three parts, the middle part being provided with a number of apertures. This strip of material is inserted in the casing from the bottom thereof until the edges of the apertured middle part abut the edges of the inwardly turned walls near the top of the casing. The parts of the strip on either side of the middle apertured part, which now forms a partition, extend downwards to the bottom thereof and abut the bottom flaps when these are turned inwards, thus maintaining the apertured part against the abutments. The space enclosed between the apertured partition and the bottom of the casing is next provided with dovetailed partitions which divide the space into a number of compartments corresponding to the apertures in the partition. The container is

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thus complete and ready to be filled with bottles, after which the bottom flaps may be turned inwards and sealed.

Hand-holes may, if desired, be provided in two opposite walls of the casing for convenience in the handling thereof.

It will readily be understood that the bodies of the bottles are enclosed between the apertured partition and the bottom of the casing. The shoulders of the bottles are against the partition, and their necks project through the apertures in it. Since the walls of the casing are only turned inwards above the full height of the bottles there is surrounding the necks of the bottles a flange which protects them and prevents them from being accidentally broken off in the handling of the container. It will also be evident that the turning in of the walls of the casing is not only a very convenient means of providing an abutment for the apertured partition, but also results in the flange surrounding the necks of the bottles being of double thickness and correspondingly greater strength.

The casing according to the invention may be made of any convenient material but, for preference, in the packing of fragile articles, it is of corrugated board.

It will be obvious that modifications may be made in the structural form of the constituent parts of the container without departing from the scope of the invention. For instance, the apertured partition may be the middle portion of a long strip of material, which is divided by creasing into three parts on each side of the apertured portion. A container may be formed by inserting the apertured portion of this strip into the top of an open ended casing so that the side portions adjacent the apertured partition lie against and within two opposite walls of the casing, the next side portions lie outside these walls, and the end portions are turned inwards at the bottom of the casing to lie between the walls and the sides of the articles to be inserted. In such case the two walls of the casing referred to will not have flaps at the bottom, and the closure will be constituted by flaps on the other two walls, preferably both such size as to cover completely the bottom of the container and there be secured.

Dated this 27th day of May, 1931.

H. D. FITZPATRICK & Co.,

Chartered Patent Agents,

49, Chancery Lane, London, W.C.2, and

31, Hope Street, Glasgow.

COMPLETE SPECIFICATION.

Improvements in Cardboard or like Containers for Articles of Merchandise.

We, **EGGULE CORRUGATED CONTAINERS LIMITED**, a British Company, and **NORMAN PRINCE GORD**, a British subject, both of Park Royal Road, North Acton, London, N.W.10, England, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to cardboard or like containers for articles of merchandise and its object is to provide a container of improved construction which will be pilfer-proof, that is to say, will permit the articles contained in it to be visible, while positively preventing their removal without damage to the container or its closure. For convenience in describing the invention the articles are hereinafter referred to as bottles or the like, but it is to be understood that with slight constructional modifications containers according to the invention may be adapted for the storage and transport of many other kinds of articles, for example, eggs, electric lamps, pencils with sharpened ends, or in fact any articles having parts of smaller and

larger girth.

According to the invention the pilfer-proof container for bottles and like articles of merchandise comprises a casing having an open top and an apertured partition through which the articles may severally be visible or project the partition being separate from the casing, and retained therein by abutments formed by turns in two or more walls of the container upon themselves.

The partition may be retained in one direction by the said abutments, and have extensions turned along or about the walls of the casing to retain the partition in the other direction.

It is an advantageous feature of the container that the walls of the casing may extend to a greater height above the partition than the necks of the bottles projecting through it, so that they are protected.

In one form of the invention the apertured partition may constitute one end of a crate-like structure in which articles may be placed, the crate being adapted to be inserted in a casing with its apertured end against abutments adjacent the

open top thereof and secured within the casing by closing and sealing flaps integral with the casing and constituting its bottom.

In another form of the invention, which may be of particular use where the articles themselves are not capable of maintaining the apertured partition in its position against the abutments, some or all of the edges of the partition may be turned and extended along or about the walls of the container and so hold the partition against the abutments adjacent the open end of the casing.

One embodiment of the invention will now be described by way of example with reference to the accompanying drawings wherein:—

Figs. 1, 2 and 3 are inverted perspective views respectively of a casing, an apertured partition and intersecting separating partitions, which on assembly constitute the container;

Fig. 4 is a sectional elevation of a container in an inverted position with its bottom open for filling; and

Fig. 5 is a perspective view of the filled and sealed container partly broken away to show a bottle in position.

A rectangular open ended casing 1 of cardboard or like material has its walls severally extended upwards and downwards beyond the length of the bottles to be held in the container of which the casing is to form a part. The upward extensions 2, 3 of the walls are turned in upon themselves, thus leaving the top 4 of the casing open. The lower extensions 5, 6 are suitably shaped into flaps which may be turned inwards and sealed to close the completed container after it has been filled. A strip 7 of cardboard or like material is divided by two creases into three parts, the middle part being provided with a number of apertures 8. This strip of material is inserted in the casing from the bottom thereof until the edges 9 of the apertured middle part abut the edges 10 of the inwardly turned extensions 2, 3. The parts 11 of the strip 7 on either side of the middle apertured part, which now forms a partition, extend downwards to the bottom of the casing 1 and about the bottom flaps 5 when these are turned inwards, as shown in Fig. 5, thus maintaining the apertured part against the abutments 10. The space enclosed between the apertured partition 7 and the bottom of the casing is next provided with intersecting partitions 12, 13 which divide the space into a number of compartments corresponding to the apertures 8 in the partition. The container is then complete and ready to be filled with bottles, after which the bottom flaps 5 and 6 may be

turned inwards and sealed with an adhesive strip 15.

Hand-holes 14 may, if desired, be provided in two opposite walls of the casing for convenience in the handling thereof.

It will readily be understood from Figs. 4 and 5 that the bodies of the bottles 16 are enclosed between the apertured partition 7 and the bottom 5, 6 of the casing. The shoulders of the bottles are against the partition, and their necks project through the apertures in it. Since the extensions 2, 3 of the casing are only turned inwards above the full height of the bottles, there is surrounding the necks of the bottles a flange which protects them and prevents them from being accidentally broken off in the handling of the container. It will also be evident that the turning in of the walls of the casing is not only a very convenient means of providing an abutment for the apertured partition, but also results in the flange surrounding the necks of the bottles being of double thickness and correspondingly greater strength.

The extensions 2, 3 when turned inwards maintain themselves in position. The extensions 2 are first doubled inwards and thereafter the extensions 3 are turned inwards, their lateral edges engaging the surfaces of the extensions 2, as shown in Fig. 1. Thus, when the extensions 3 are completely doubled in they are maintained in this position by the friction of their edges against the surfaces of the extensions 2, which are also maintained in position by the abutting edges of the extensions 2.

The container according to the invention provides a high degree of protection against pilfering or substitution of the contents during transit, since the condition of the contained articles is at all times plainly visible, while convenient access to the articles may only be had in a manner which is obviously indicated thereafter, as by the breaking of the sealing strip or damage to the container. The several parts of the container may be made of any convenient material but, for preference, in the packing of fragile articles, they are of corrugated board.

It will be obvious that modifications may be made in the structural form of the constituent parts of the container without departing from the scope of the invention.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

1. A pilfer-proof container for bottles and like articles of merchandise compris-

ing a casing having an open top and an apertured partition through which the articles may severally be visible or project, the partition being separate from the casing and retained therein by abutments formed by turning in two or more walls of the casing upon themselves.

2. A container according to claim 1, wherein the said abutments retain the partition in the one direction and the partition has extensions turned along or about the walls of the container to retain the partition in the other direction.

3. A container according to claim 1 or 2, wherein the partition constitutes an apertured end of a crate-like structure adapted to be inserted in the casing and there located and secured.

4. A container according to any of claims 1 to 3, wherein the walls of the casing are of greater height above the partition than the parts of the articles projecting therethrough, for protecting the said parts.

5. A pilfer-proof container for bottles and like articles of merchandise, substantially as described with reference to the accompanying drawings.

Dated this 18th day of February, 1932.

H. D. FITZPATRICK & Co.,

Chartered Patent Agents,

49, Chancery Lane, London, W.C.2, and

94, Hope Street, Glasgow.

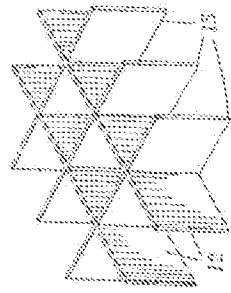


Fig. 3.

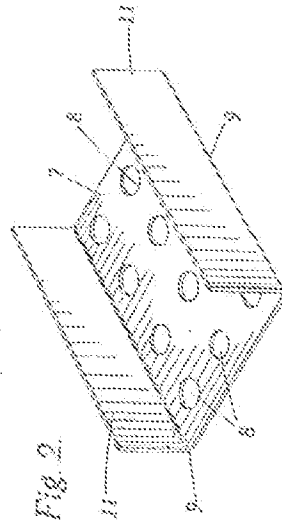


Fig. 2.

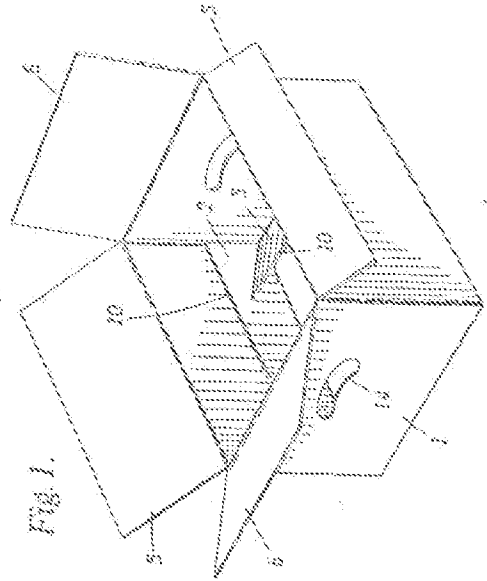


Fig. 1.

Fig. 4.

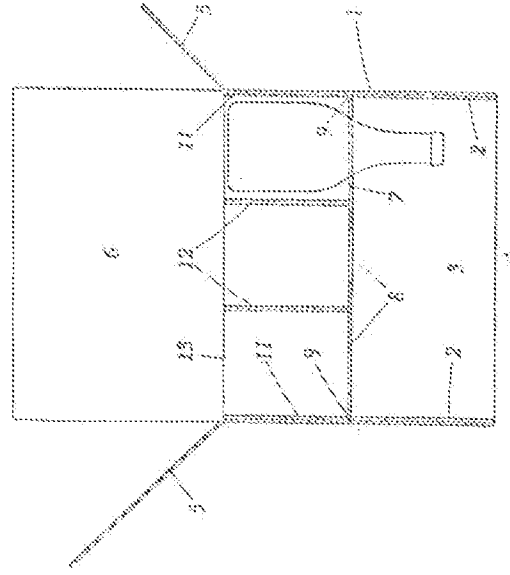
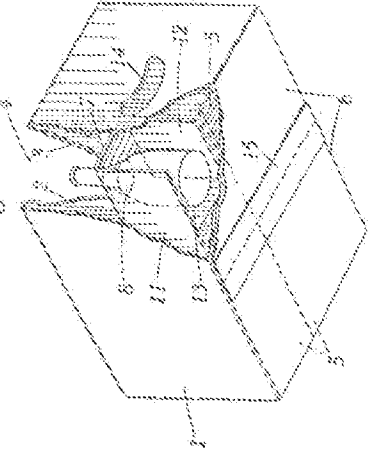


Fig. 5.



[This Drawing is a reproduction of the Original on a reduced scale]

Fig. 3.

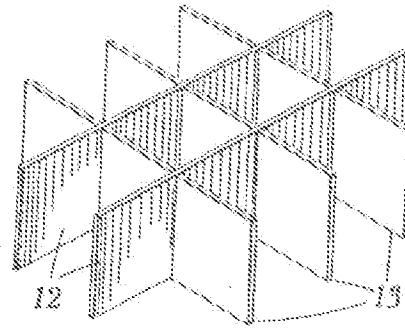


Fig. 2.

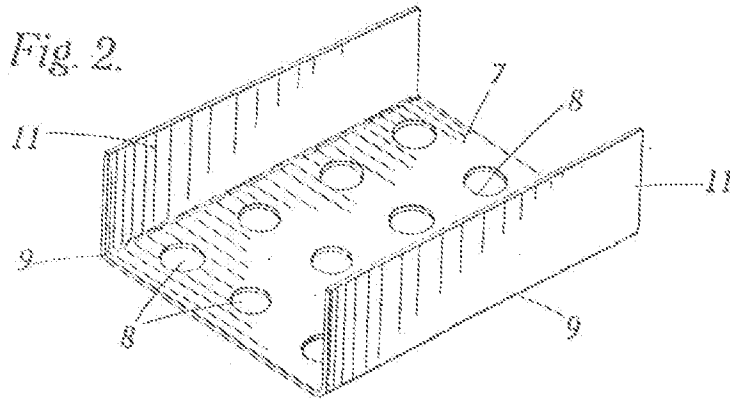
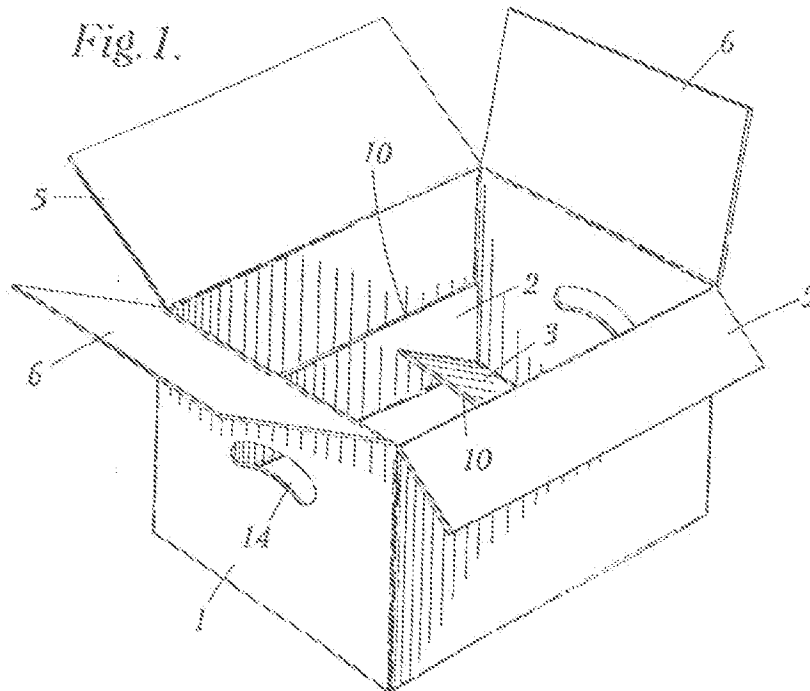


Fig. 1.



[This Drawing is a reproduction of the Original on a reduced scale]

Fig. 4.

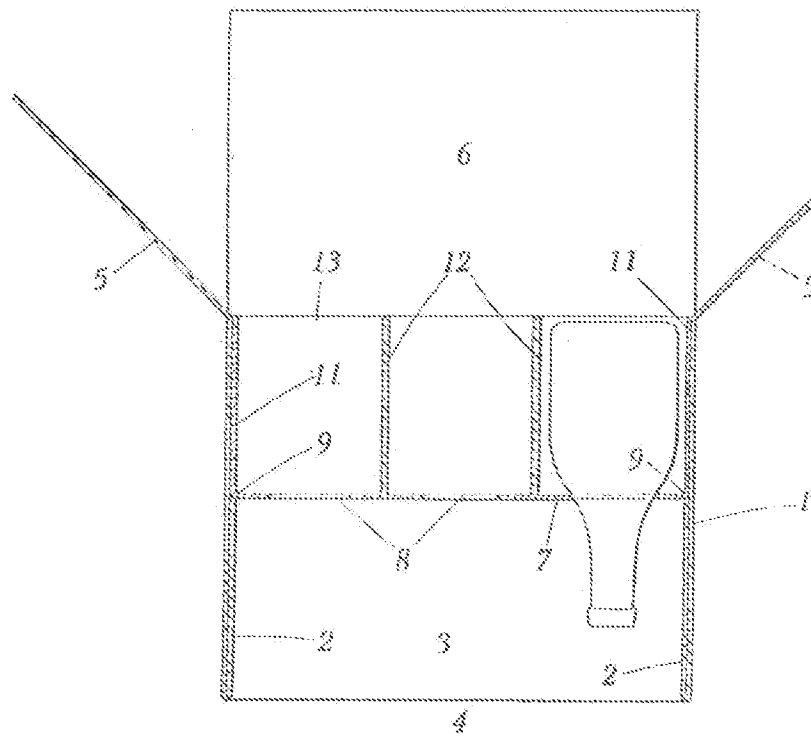
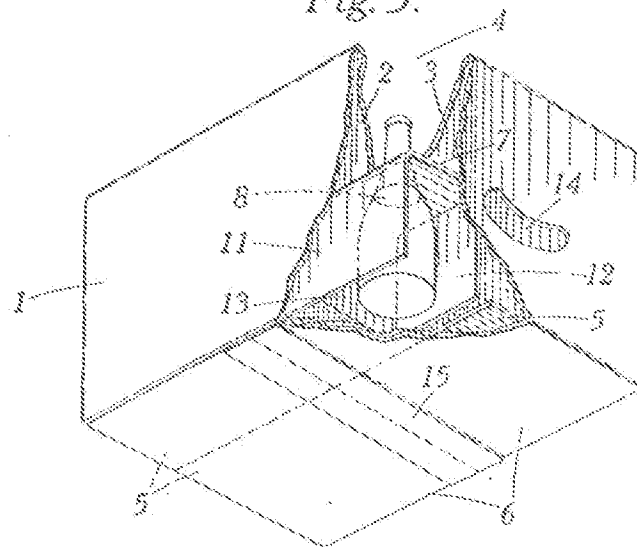


Fig. 5.





Application Date: May 5, 1933. No. 13,083/33.

406,511

Complete Left: June 15, 1933.

Complete Accepted: March 7, 1934.

PROVISIONAL SPECIFICATION.

Improvements relating to Packing Cases for Bottled Goods.

I, KENNETH JAMES MARDON, of Redcliffe Lodge, Filton, in the County of Gloucester, of British Nationality, do hereby declare the nature of this invention to be as follows:—

This invention relates to packing cases for the transport of bottled goods, and is applicable to cases constructed from any suitable material including plain or corrugated cardboard, wood and metal.

The shape or construction of the case is not a feature of the invention, which consists of a horizontal perforated pad or diaphragm fitting tightly within any form of case.

The ends and sides of the diaphragm may be scored to facilitate bending, and thereby may be slightly larger than the interior of the case for the purpose of effecting side thrust—due to the arc of the curve in bending—when the diaphragm is subjected to stress, as by efforts to remove the diaphragm.

An important feature of the diaphragm is the formation by punching or otherwise, of circular holes in the diaphragm, the said holes being arranged to register accurately with the positions of any number of bottle necks or stoppers when the case is filled.

The said holes may be rendered expansive by the slotting of radial cuts which penetrate the diaphragm around the circumference of the holes, so that the

stoppers of the bottles, or the necks may be pushed through the holes, when the diaphragm is forced into the case.

The segments formed by the said radial cuts about the holes, are contracted below the stoppers or the neck projections of the bottles, and provide a protection against unauthorised removal.

An alternative arrangement for securing the diaphragm at the sides or ends where the diaphragm is in close contact with the case, is effected by dishing up the borders of the diaphragm to the extent of one or two inches at right angles to the plane of the diaphragm.

The said borders are arranged to butt against the edges of doubling strips which are common in such cases and are formed during construction.

This modification of the diaphragm is otherwise arranged with a series of holes slotted with radial cuts for locking under the bottle stoppers as before described.

The safety pad or diaphragm as described is not a constructive feature of the case, per se, and is readily arranged as a fitment for large, medium or small cases in a variety of shapes.

Circular or elliptical cases may be fitted with the pad or diaphragm modified to suit the outline of the case, preserving the features of safety as before described.

Dated this 3rd day of May, 1933.

KENNETH J. MARDON.

COMPLETE SPECIFICATION.

Improvements relating to Packing Cases for Bottled Goods.

I, KENNETH JAMES MARDON, of Redcliffe Lodge, Filton, in the County of Gloucester, of British Nationality, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to packing cases for the transport of bottled goods, the cases being of wood, cardboard or other suitable material.

The improvement is not considered as

referring to the construction of the case itself, but concerns the method of securing the goods by means of detachable diaphragms fitted in the upper side of the cases and rendered removable by flexing the said diaphragms.

A case of this nature has been described having an upper border of double thickness formed by turning down a broad edge of the case itself, and a permanent cardboard division having apertures fitted over the necks of the bottles is secured below the ledge so formed.

According to that invention a packing case for bottled goods is permanently closed and the case has to be damaged to remove the contents which are accessible only from the bottom of the case.

In my invention herein described, the upper edges of the cardboard case are creased and folded down inside as doubling strips, a form generally in use, and the inverted ledge so provided is utilized to secure the removable diaphragm before mentioned.

The turned down borders of the case—or doubling strips—may be substituted by a separate bottom of wood or other material suitably fastened to the case.

The diaphragm or cover is holed with punched circular apertures to allow the diaphragm to pass over the bottle necks, and the said apertures may be rendered expansive by the slotting of radial cuts around the apertures to facilitate the forcing of the diaphragm over a series of container necks fitted with stoppers or capsules. The apertures thus segmented, contract automatically below the stoppers, capsules or projecting rings upon the container necks as hereinafter shewn.

An alternative arrangement of the diaphragm or cover is effected by dishing up the borders of the diaphragm to engage with the inverted ledge formed by the folded upper edges of the case before described. In this modified form of the diaphragm, the punched holes are not slotted as described for the plain diaphragm, and are arranged to fit lower upon the shoulders of the bottles as shewn hereinafter in detail.

Having reference to the accompanying drawings—

Fig. 1 is a general isometric view of a cardboard case as described.

Fig. 2 is a cross section of a case showing the modified diaphragm or cover.

Fig. 3 is a plan of the case as at Fig. 1.

Fig. 4 is a part section of the upper side of the case shewn in plan, Fig. 3.

Fig. 5 is a similar part section of the upper side of the case shewn in Fig. 2.

Referring to Fig. 1, the shell of the case 1 is turned over at 2, the strip 2¹ being doubled inside the case and riveted, or a separate doubling strip may be secured in the same position by suitable fasteners.

The strip 2¹ forms an inverted ledge at 3, below which the rectangular diaphragm or cover 4 is tightly fitted. The diaphragm is secured in place by flexing it and forcing it into the top of the case until it engages beneath the ledge. The diaphragm is removed in the same way, providing access to the goods without damage to the case.

The diaphragm has holes punched as at 5, through which the necks of the bottle containers project, the containers being held in position also by cells formed by intersecting partitions 6 shewn by dotted lines. Slots or cuts 7 are formed around the holes to facilitate the passage of the diaphragm over the bottle stoppers as further shewn in detail.

The case when of cardboard is riveted as at 8, and may be reinforced at the corners 9 with canvas or other fabric.

Openings 10 are provided in the ends of the case for convenience in handling.

When the case is made of wood, screws, nails or other fasteners are used, and the borders 2¹ are fitted as separate battens below which the diaphragm 4 is firmly held.

Fig. 2 is a cross section of a case fitted with the modified dished diaphragm 11, which is shewn fitted below the folded border 2¹. The holes 5 are of larger diameter than the slotted holes shewn in Fig. 1, and are arranged to fit tightly against the shoulder of the bottle or container 12, as at 14.

The diaphragm rests upon the intersecting partitions 6 which form separate cells for the bottles.

Fig. 3 is a plan of the case shown in Fig. 1. The diaphragm 4 is in position below the turned over border 2¹. The bottle stoppers or capsules 13 project above the holes 5. The slotted cuts 7 form segments 7¹ which are raised up under the capsule, or under a projection formed upon the bottle neck when the holes are forced over the bottle. The divisions 6 indicate the partitioned cells below the diaphragm.

Fig. 4 is a part cross section of the upper side of the case shewn in Fig. 2, and shows in greater detail the turned down border 2, 2¹. The diaphragm or cover 4 is tightly fitted below the ledge 3, and when the holes 5 are forced over the bottles, the cuts 7 permit the segments 7¹ to be lifted below the capsule or the enlarged bottle neck 13.

Fig. 5 is a part cross section of the upper side of the case indicated at Fig. 2 in which the alternative form of the diaphragm 11 is dished up to fit against the ledge 3 when fitted into position. The hole 5 is of larger diameter to allow the diaphragm to rest on the shoulder of the bottle at 14.

The diaphragm is flexed to facilitate fitting in position below the doubling strips, and is expanded below the said strips as at 3, to form a tight cover.

It is known that cardboard cases have been constructed for safety and protection, but the invention herein described

is applicable to cases of ordinary construction and to cases of various shapes other than the usual rectangular case.

5 Having now particularly described and ascertained the nature of my said invention, and in what manner the same is to be performed, I declare that what I claim is:—

10 1. A packing case for bottled goods permanently closed at the bottom and with an upper edge of double thickness formed either by folding down and securing the edge of the case, or by securing battens on the inside around the mouth of the
15 case, in which a flexible removable diaphragm is fitted into the upper part of the case to engage beneath the lower edge of the inner fold or the bottom, the bottle

necks passing through apertures in the said diaphragm which is of such nature
20 that it may be flexed for removal so that the case may be unpacked.

2. A packing case for bottled goods as claimed in Claim 1, in which the diaphragm is modified by having its border
25 dished up to engage with the lower edge of the fold or the batten.

3. A packing case for bottled goods as claimed in Claims 1 and 2, in which the
30 holes in the diaphragm are radially slotted to form segments which hold the bottle necks when forced over the bottles substantially as shown.

Dated this 13th day of June, 1923.
KENNETH J. MARDON.

Fig 1

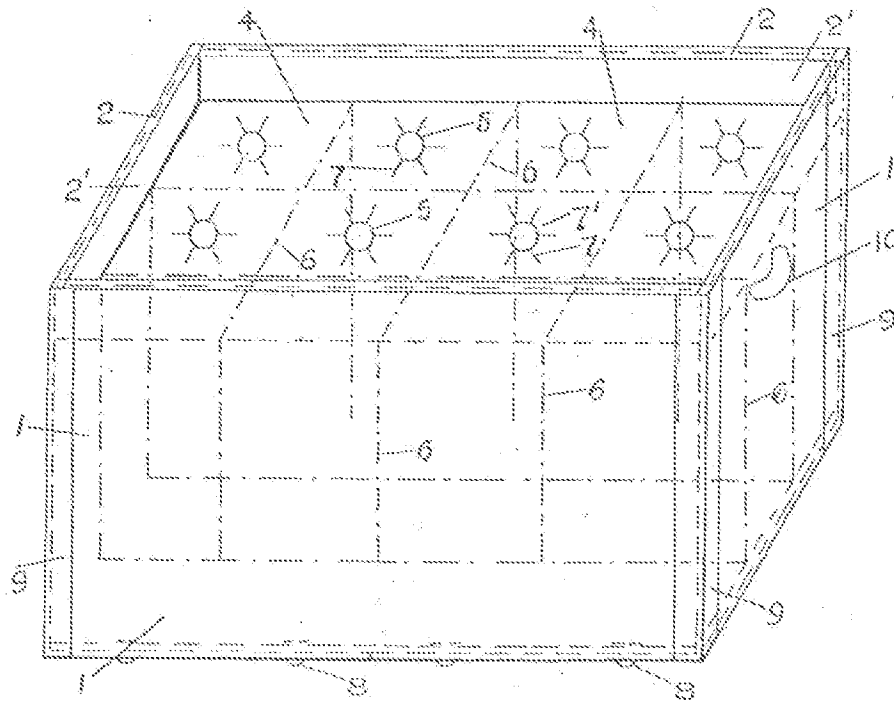
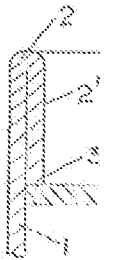
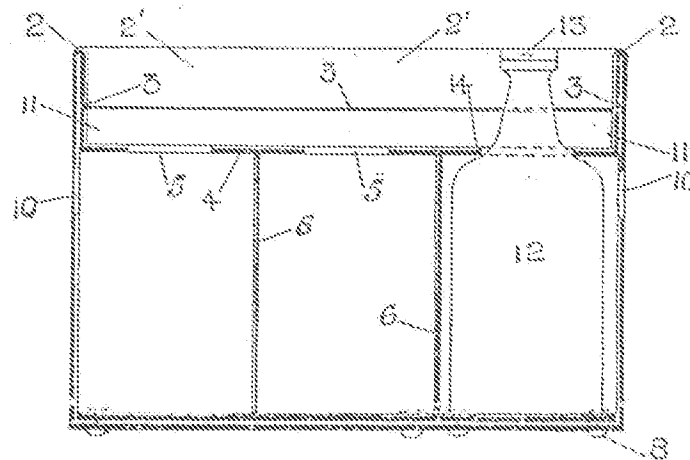


Fig 2



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Fig 3

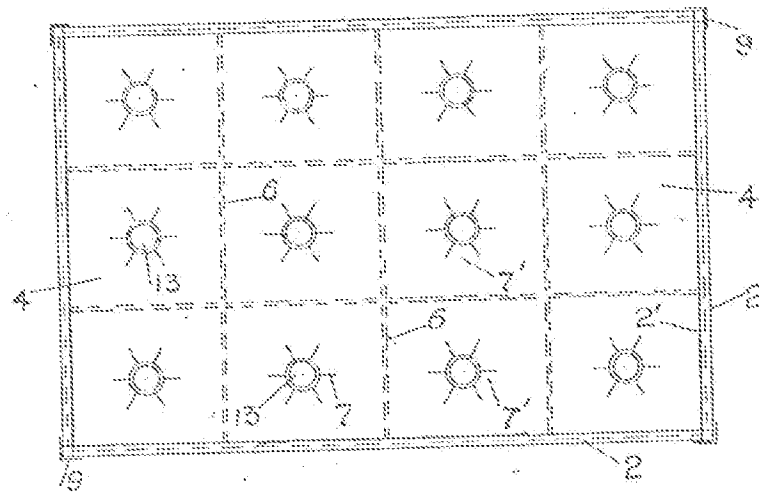


Fig 4

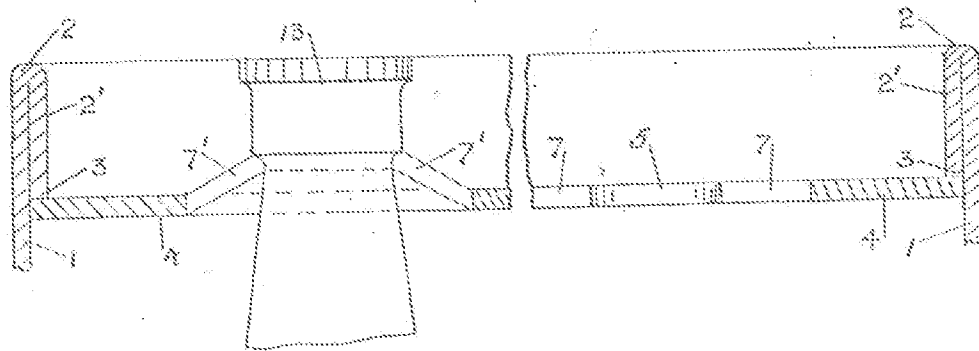
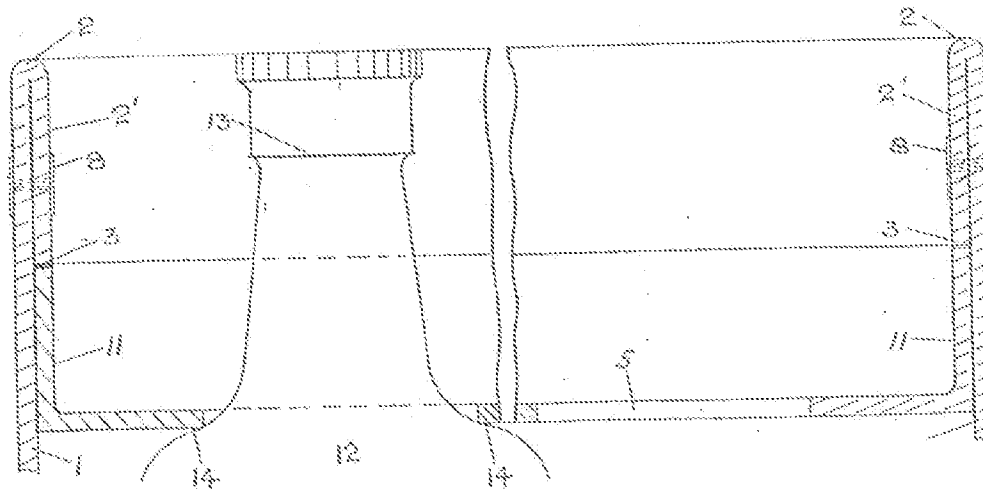


Fig 5



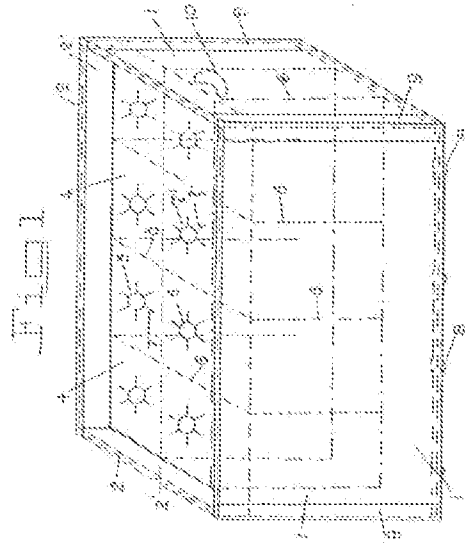


Fig. 1

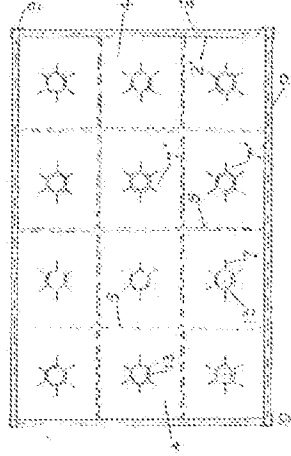


Fig. 3

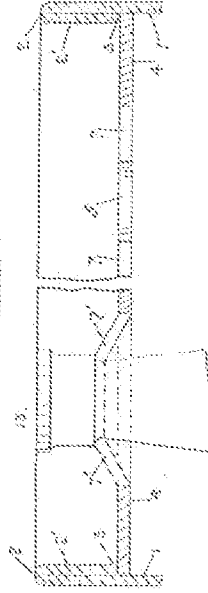


Fig. 4

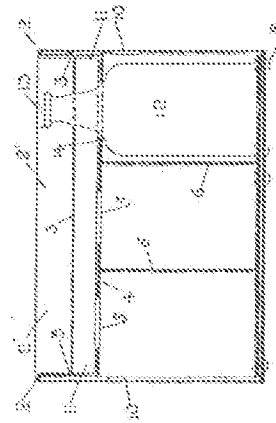
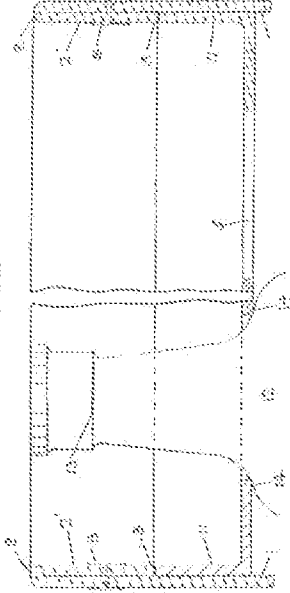


Fig. 2



DRAWINGS ATTACHED



1 262 777

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 (23) Complete Specification filed 1 Oct. 1970
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 B8P 21B 4J 8C1B1 8C1B2 9A
 (72) Inventor HEDLEY SILMON BRYANT

(54) CONTAINER AND BLANK THEREFOR

(71) We, MARION, SON AND HALL LIMITED, a British Company of Temple Street, Bristol, 1, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to a container erected from a blank of stiff but foldable material, e.g. fibreboard or a suitable plastics material, and to the blank from which the container is erected.

The invention provides a container having a rectangular base panel and four walls which can be readily collapsed outwards in order to expose merchandise lying on the base panel.

According to one aspect of the invention, a container erected from a blank of stiff but foldable material comprises a rectangular base panel, two pairs of opposing walls and inwardly folded corner webs which connect adjacent walls, wherein two opposing walls have extensions which are folded downwards towards the base panel, doubled back on themselves and bonded to form double-layer hingeable panels which reinforce the walls, the extensions terminating in dust flaps which when pulled outwards cause outward collapse of the four walls.

The double-layer hingeable panels are preferably folded over the adjacent corner webs and arranged to hold them releasably in their folded upright position.

Preferably, the other two opposing walls have extensions which are folded down towards the base panel, doubled back on themselves and bonded to form double-layer further panels which however are also bonded to their respective walls.

Preferably, at each corner of the container a double-layer hingeable panel is releasably interlocked with a double-layer

further panel to hold an adjacent corner web in position.

Accordingly another aspect of the invention, a blank of stiff but foldable material is provided with fold lines for erection into a container as above described.

By way of example the invention will now be described with reference to the accompanying drawings, of which:

Figure 1 is a cruciform blank for erection into a lidded carton,

Figure 2 shows the blank after certain portions have been folded and glued together,

Figure 3 is a perspective view of the carton with one end panel pulled down to reveal the interior,

Figure 4 is a perspective view of the fully erected carton, and

Figure 5 is a perspective view of the carton with its walls collapsed outwards.

Referring to Figures 1 and 2, a die-cut blank of fibreboard is provided with fold lines shown in chain line. The blank has an oblong base panel 10 along the edges of which extend four wall panels 11, 12 connected at the corners by diagonally creased webs 13. The opposing wall panels 11 have outer extensions each of which is divided by parallel fold lines into inner and outer panels 15, 16 and a flap 17. The panels 15 are provided with slots 18 and the panels 16 are formed with pairs of end tabs 19. One of the wall panels 12, which is to be the front wall of the erected carton, has an outer extension divided by parallel fold lines into inner and outer panels 20, 21 and a flap 22. The outer wall panel 12, which is to be the rear wall of the erected carton, has an outer extension divided by parallel fold lines into inner and outer panels 24, 25 a lid panel 26 and a tuck-in flap 27. The inner and outer panels associated with the wall panels 12 are provided with small recesses 28 and

[Price 25p]

the lid panel 26 is formed with a pair of opposing tabs 29.

To obtain the glued blank of Figure 2, adhesive is applied on one face of the blank 5 to panels 20, 24 and on the other face of the blank to panels 15, 25 and also along the region of the fold line between panels 20 and 21. The blank is then folded a) to bond panel 24 to panel 12 and panel 10 25 to the exposed face of panel 24, b) to bond panel 20 to panel 12 and panel 21 to the exposed face of panel 20 in the region only of their common fold line, and c) to bond each panel 16 to the adjacent 15 panel 15. The folded flat glued blank is now as shown in Figure 2 and is ready for supply to a customer for erection and loading.

At this stage each wall panel 11 has 20 hinged to its outer edge a double-layer panel consisting of two panels 15, 16 bonded together and also a flap 17. Each wall panel 12 has been reinforced over its outer portions by a double-layer further 25 panel consisting of two panels 20, 21 or 24, 25 bonded together with panel 20 or 24 as the case may be also bonded to its wall panel 12.

The carton of Figure 4 may be erected 30 in the following manner. The four wall panels 11, 12 are folded upwards at 90° to the base panel 10 whilst simultaneously the corner webs 13 are folded inwards. The double-layer hingeable panels with their 35 flaps 17 are folded downwardly and inwardly through 180° to fold over the tops of the corner webs 13, the tabs 19 on each panel 16 engaging in the recesses 28 of panels 24, 25 and 20, 21 to hold the corner webs releasably in their folded 40 upright position. The flaps 17, 22 constitute dust flaps. The carton with its four reinforced side walls is now ready for top loading with merchandise. After loading, 45 the hinged lid panel is closed down, its tuck-in-flap 27 entering a narrow space provided between the panels 20, 21 and becoming releasably secured therein by engagement of the lid tabs 29 in the slots 50 18. The carton has a recessed lid for facilitating vertical stacking.

To remove the merchandise or to inspect it in position on the base panel 10, the lid is pulled upwards about its hinge 55 forcing the tabs 29 out of engagement with the slots 18. Then the two opposing dust flaps 17 are grasped between thumbs and forefingers and pulled outwards in opposite directions, thereby causing the double-layer 60 panels which are hinged to the wall panels 11 to pivot upwards about their respective hinge lines and force their tabs 19 out of engagement with the recesses 28. This frees the corner webs 13 for unfolding. 65 Continued pulling on the dust flaps 17

causes the four wall panels 11, 12 and the corner webs 13 to collapse outwards to substantially the position shown in Figure 5. The exposed merchandise on the base panel may then be easily removed. If only 70 inspection is required, and the merchandise is of a suitable nature and size to permit re-erection, the carton may subsequently be readily re-erected and re-closed with the merchandise still in position. 75

Typical merchandise for the container is a block of ice cream or mousse which may be enclosed if desired in a transparent plastics inner lining or bag.

In a modified version of the container, 80 the lid panel 26 and tuck-in flap 27 are omitted to provide an open top container.

WHAT WE CLAIM IS:—

1. A container erected from a blank of stiff but foldable material comprising a 85 rectangular base panel, two pairs of opposing walls and inwardly folded corner webs which connect adjacent walls, wherein two opposing walls have extensions which are folded downwards towards the base 90 panel, doubled back on themselves and bonded to form double-layer hingeable panels which reinforce the walls, the extensions terminating in dust flaps which when pulled outwards cause outward col- 95 lapse of the four walls.

2. A container according to claim 1, wherein the double-layer hingeable panels are folded over the adjacent corner webs and arranged to hold them releasably in 100 their folded upright position.

3. A container according to claim 1, wherein the other two opposing walls have extensions which are folded down towards the base panel, doubled back on themselves 105 and bonded to form further double-layer panels which are also bonded to their respective walls.

4. A container according to claim 3, wherein at each corner of the container a 110 double-layer hingeable panel is releasably interlocked with a double-layer further panel to hold an adjacent corner web in position.

5. A container according to claim 3, 115 wherein the further double-layer panels terminate in dust flaps.

6. A carton substantially as described with reference to and as illustrated in 120 Figures 3 to 5 of the accompanying drawings.

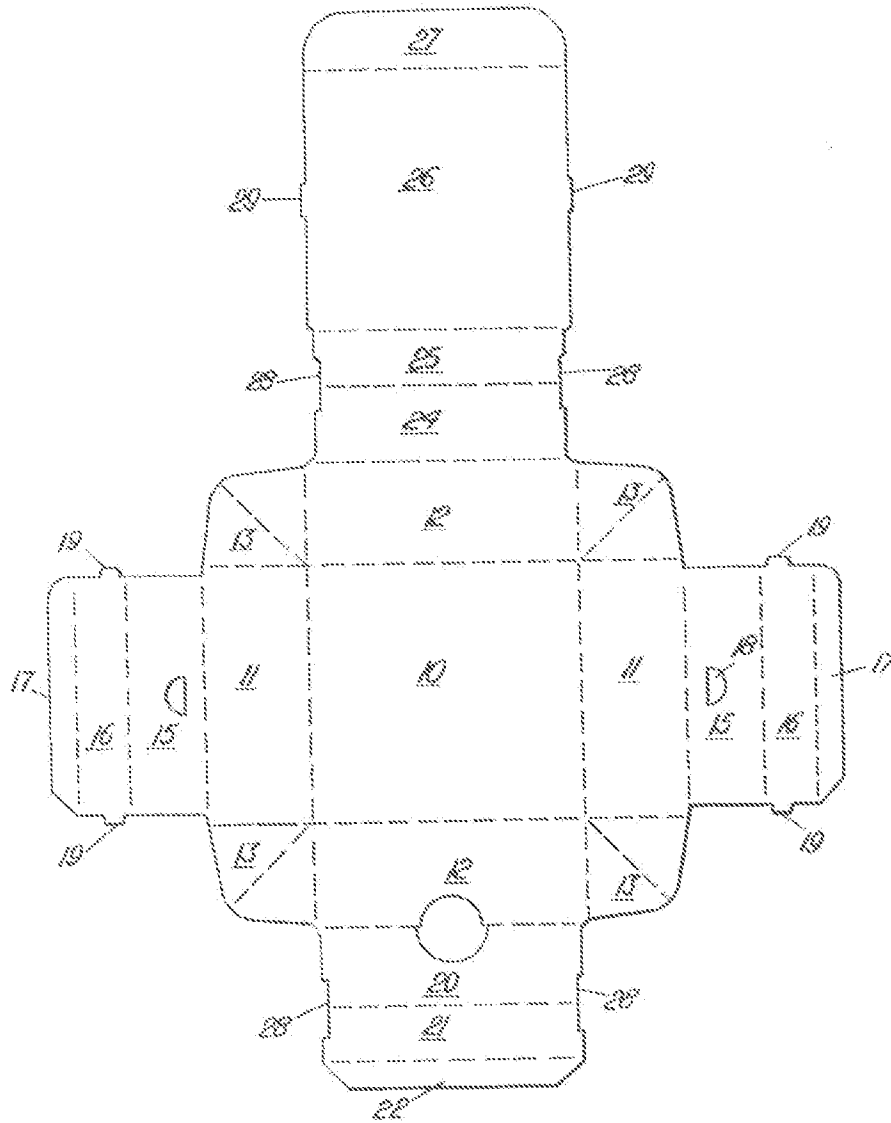
7. A blank of stiff but foldable material for erection into the container according to claim 1 which has been cut and formed with fold lines substantially as described 125 with reference to and as illustrated in Figure 1 of the accompanying drawings.

B. D. FREEMAN,

Chartered Patent Agent,

For and on behalf of the Applicants.

Fig. 1



1,262,777

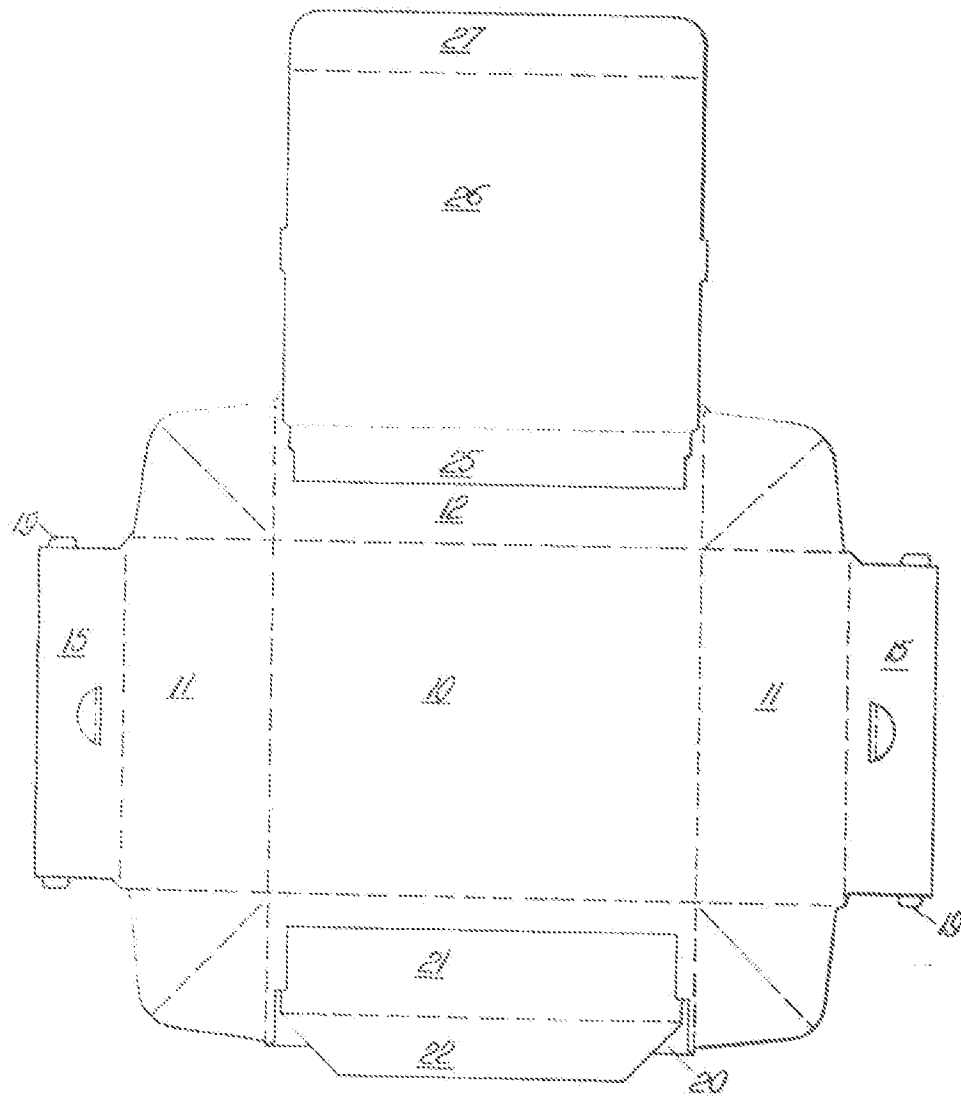
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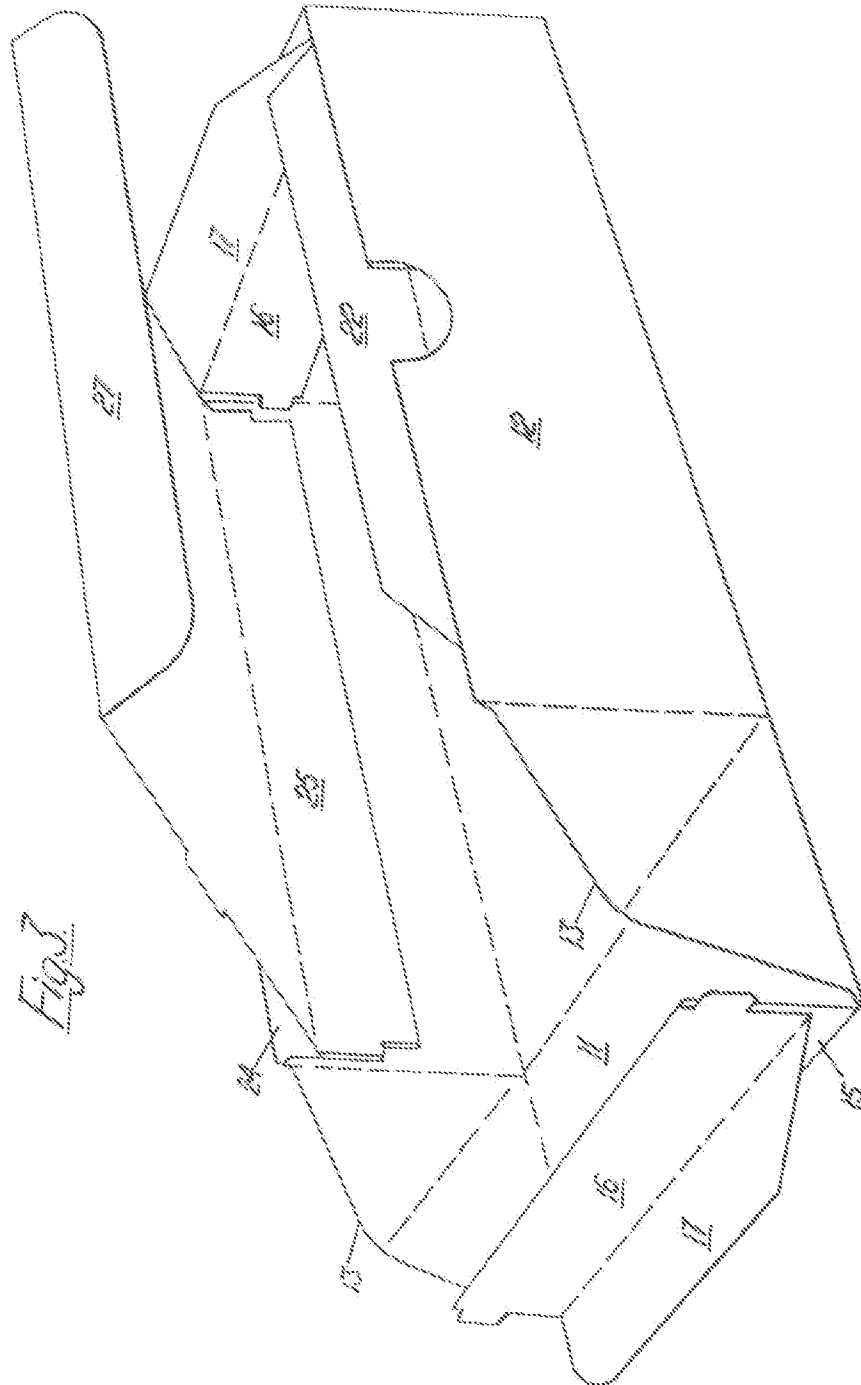
5 SHEETS

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SHEET 2

Fig. 2





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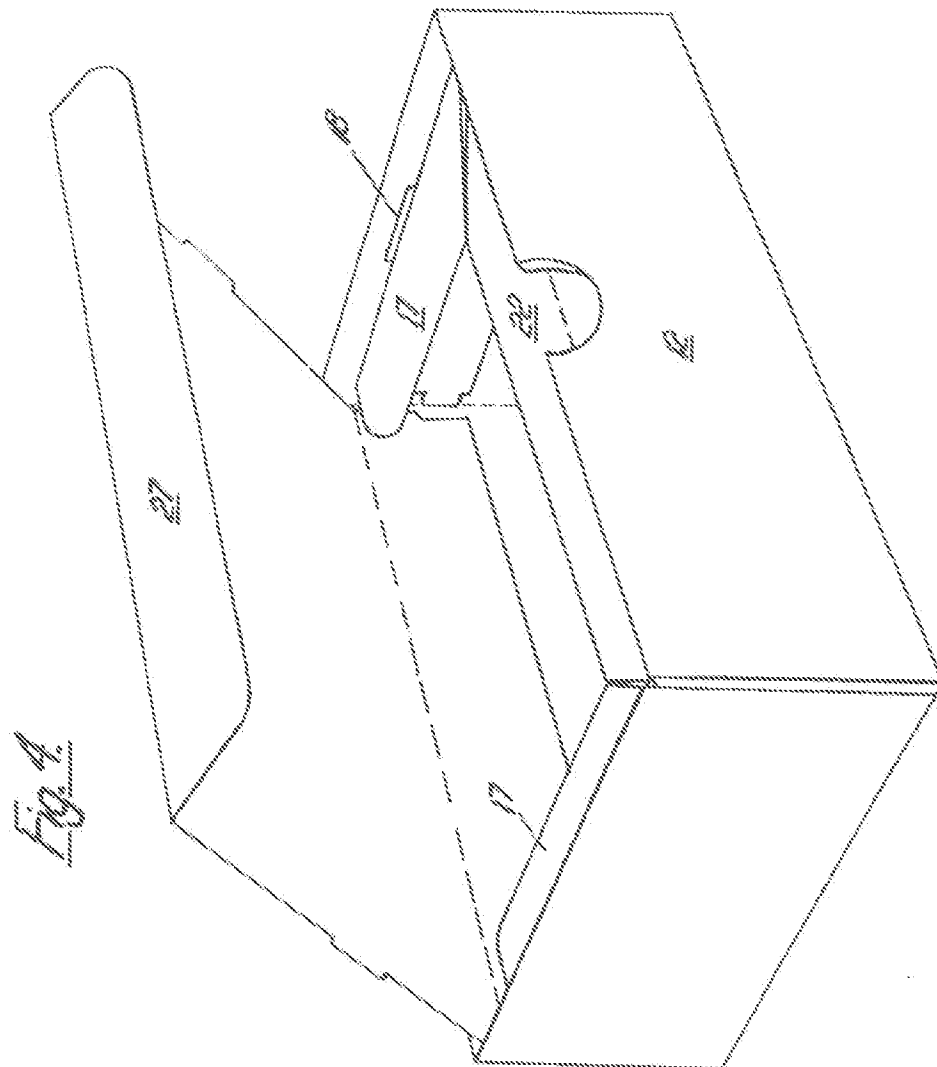
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COMPLETE SPECIFICATION

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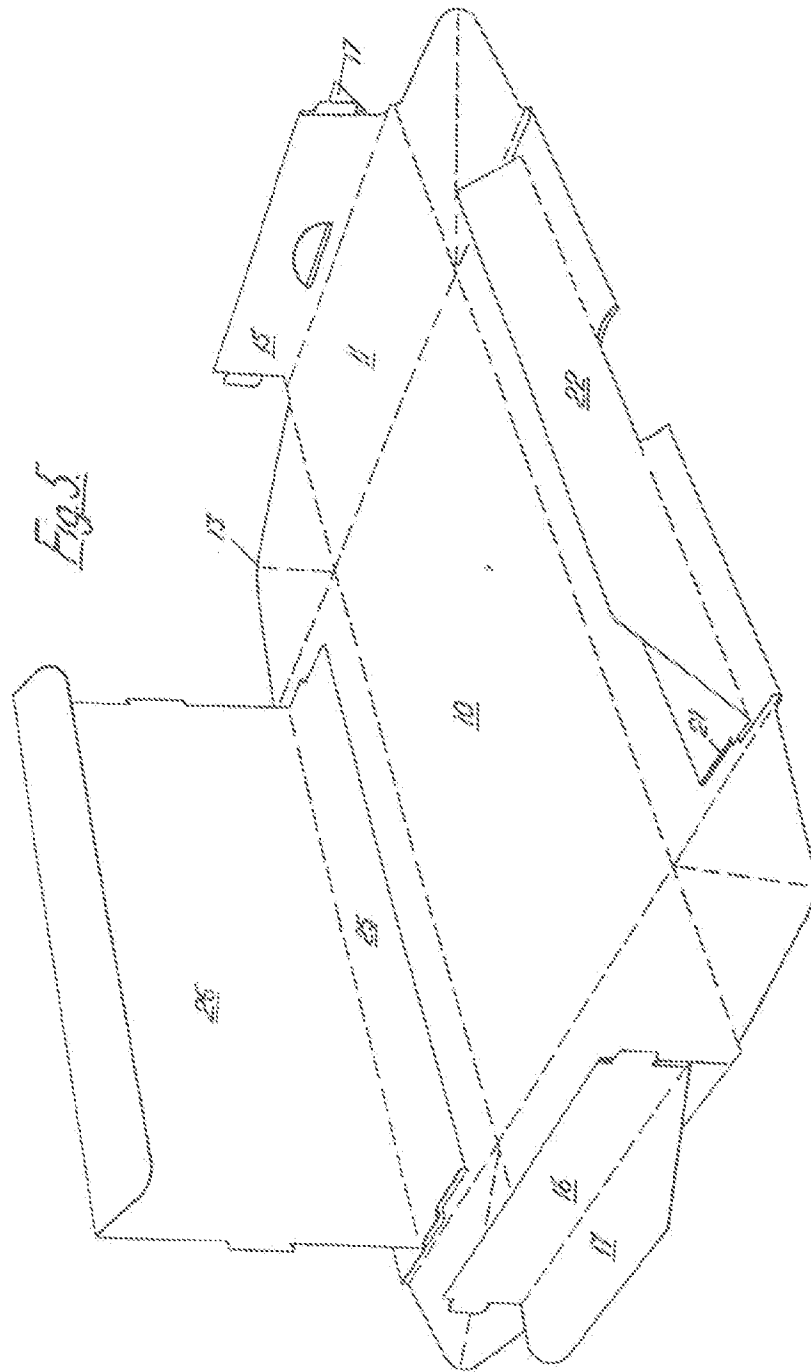
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SHEET 4



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SECRET





EXPOSÉ D'INVENTION

 AVANT
DÉPART
SÉRIE
GÉNÉRALE

Publié le 16 mai 1922

N° 93304

(Demande déposée: 1 juillet 1919, 19 h.)

Classe 46 a

BREVET PRINCIPAL

Horace PERRET, Lausanne (Suisse).

Récipient perfectionné fait d'une seule pièce découpée dans du carton.

La présente invention a pour objet un récipient d'une seule pièce découpée dans du carton, dans lequel chaque face latérale est formée par une première paroi faisant corps avec le fond et pouvant être relevée sur celui-ci ainsi que par une seconde paroi faisant corps avec la première et pouvant être rabattue sur elle à l'intérieur du récipient, les deux dites parois de l'une des faces au moins, emprisonnant entre elles une languette, faisant corps avec la première paroi de la face adjacente, dans le but d'assurer la liaison des différentes faces latérales entre elles caractérisé en ce qu'il comporte, en son intérieur, une pièce munie des faces latérales faisant corps avec un fond, ces faces pouvant être appliquées contre les parois du récipient pour empêcher que ses secondes parois puissent être écartées de façon à libérer des languettes assurant la liaison des différentes faces latérales.

Le dessin ci-jointé donne, à titre d'exemple, deux formes d'exécution de la présente invention:

La fig. 1 est une vue en plan de la première forme d'exécution;

La fig. 2 en est une vue en coupe suivant la ligne A—B de la fig. 1;

La fig. 3 est une vue en plan de la seconde forme d'exécution;

La fig. 4 en est une vue en coupe suivant la ligne C—D de la fig. 3.

Le récipient perfectionné, fait en une seule pièce dans du carton a ses faces latérales constituées par des surfaces comportant une partie *a*, susceptible d'être relevée sur le fond *b* et une seconde partie *c* pouvant être rabattue sur la partie *a* à l'intérieur du récipient de façon à emprisonner entre elles et la partie *a* des languettes *d* prévues aux parties *a* des faces latérales, immédiatement voisines, ce qui a pour effet de constituer les angles aux faces du récipient; celui-ci comporte en son intérieur une pièce munie de faces latérales *e* faisant corps avec son fond *f* et pouvant être appliquées contre les parois du récipient de façon à empêcher que les secondes parties *c* puissent être écartées des parties *a* de façon à libérer les languettes *d* assurant la liaison des différentes faces latérales.

Suivant la seconde forme d'exécution donnée par les fig. 3 et 4, la pièce placée à

L'intérieur du récipient est muni dans son fond d'ouvertures et est disposée de telle façon dans le récipient qu'elle constitue un support pour de petits récipients destinés à contenir par exemple un produit pharmaceutique et dont le récipient perfectionné sert d'emballage.

REVENDICATION :

Récipient, fait d'une seule pièce découpée dans du carton, dans lequel chaque face latérale est formée par une première paroi faisant corps avec le fond et pouvant être relevée sur celui-ci ainsi que par une seconde paroi faisant corps avec la première et pouvant être rabattue sur elle à l'intérieur du récipient, les deux dites parois de l'une des faces au moins, emprisonnant entre elles une languette faisant corps avec la première paroi de la face adjacente, dans le but d'assurer

une liaison des différentes faces latérales entre elles, caractérisé en ce qu'il comporte en son intérieur une pièce, munie de faces latérales faisant corps avec un fond, faces pouvant être appliquées contre les parois du récipient pour empêcher que ses secondes parois puissent être écartées de façon à libérer les languettes assurant la liaison des différentes faces latérales.

Sous REVENDICATION :

Récipient, conforme à la revendication, et dans lequel la pièce placée dans son intérieur présente dans son fond des ouvertures, et est disposée de façon telle, dans le récipient, qu'elle constitue un support pour de petits récipients dont le récipient sert d'emballage.

Horace FERRET.

FIG.1

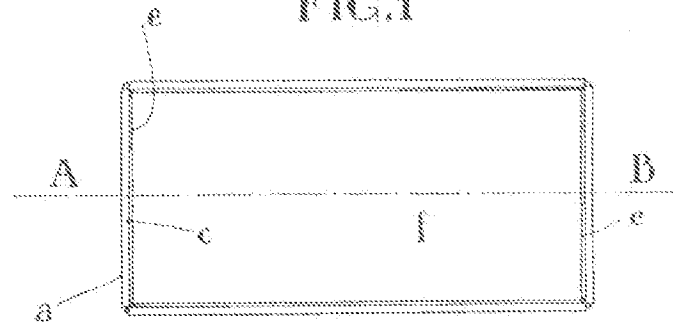


FIG.2

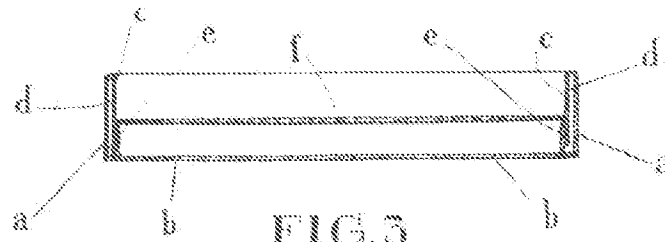


FIG.3

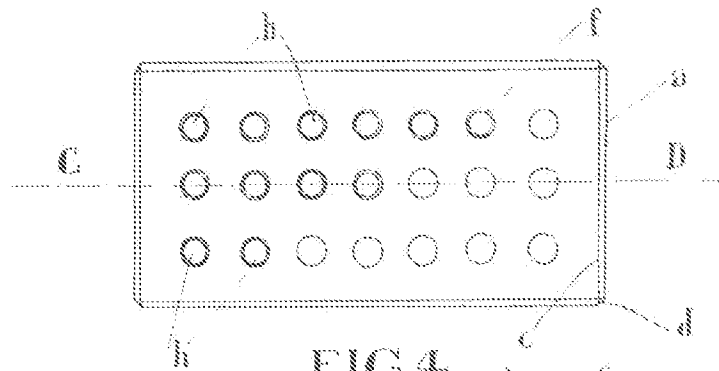
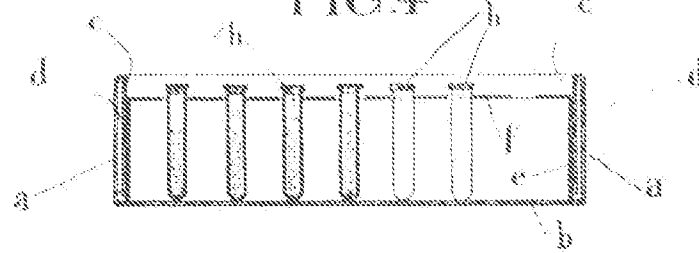
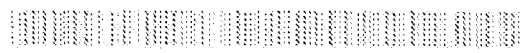
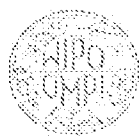


FIG.4



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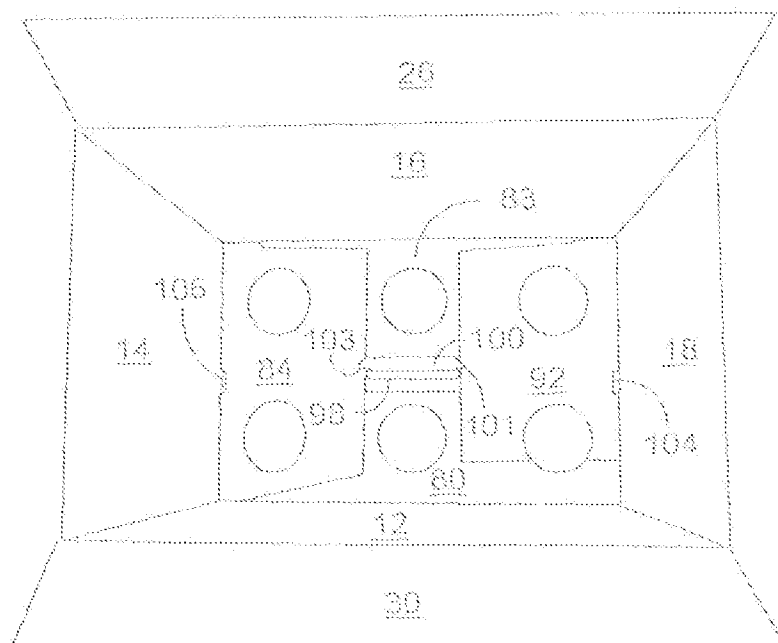
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Ill.

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with a mean of 1.50 and a standard deviation of 0.50.

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(54) Title: CARION (R) CARION BLADE



(57) Abstract: A carton and a blank for forming a carton having a plurality of wall panels (22, 24, 26, 28) for forming a tubular structure and an end wall arrangement for closing one end of the tubular structure. The end wall arrangement is formed from at least three end flaps (32, 34, 36) hingebly connected to each other along a common line, a depends (42, 44, 46) of the structure, at a side of the flaps.

CARTON AND CARTON BLANK

Background of the Invention

5 The invention relates to a carton and blank for forming a carton for carrying a plurality of articles, for example bottles, and an access structure.

The invention is particularly useful where it is desirable for cartons containing articles to be enclosed, to protect the or each article, for example bottles. Furthermore, the carton should
10 be re-closable to be re-used.

One example of a re-closable sleeve formed from one or more blanks of paperboard is found in US 3 070 030 which illustrates a carton having integral hinged tops which is reclosable.

15 In US 1 941 514, there is illustrated a carton with a top structure formed from four flaps. Each flap is provided with a locking tab to engage the opposing flap. A problem associated with this carton is that each of the flaps needs to be carefully aligned in order to be secured together as each flap comprises a locking tab. The article is contained within the carton of US 514 which makes it possible for the panels to be folded and manipulated. However, in
20 automated packing, it is necessary to load articles into the cartons at high speeds. Therefore, it is undesirable to have a complicated arrangement for forming an end closure structure.

Summary of the Invention

25 The present invention and its preferred embodiments, seek to overcome or at least mitigate the problems of the prior art.

A first aspect of the present invention provides a carton having a plurality of wall panels for forming a tubular structure and an end wall arrangement for closing one end of the tubular
30 structure. The end wall arrangement is formed from at least three end flaps hingedly

- 2 -

connected to corresponding wall panels of the structure, wherein one of the flaps is provided with a locking means to engage the other flaps, thereby to secure the flaps together.

Preferably, the locking means may comprise a tab extending from the end edge of said first flap adapted to be received in an aperture formed in the opposing flap to secure the first and opposing flaps together.

More preferably, the locking means may further comprise a tongue extending from a side edge of said first flap for engagement with an adjacent wall panel and wherein the said adjacent wall panel may be formed with a notch or opening to receive the tongue.

Preferably, the locking means further comprises a second tongue extending from a side edge of said first flap for engagement with an adjacent wall panel and wherein the said adjacent wall panel is formed with a notch or opening to receive the tongue.

Optionally the carton comprises a vertical tubular body and the end wall arrangement may be recessed.

Each adjacent wall panel may further comprise a reinforcing panel folded to be disposed on the inside surface of the tubular body and wherein the reinforcing panel may be formed with the notch or opening for engagement with the tongue.

According to an optional feature of this aspect of the present invention, the recessed end wall structure may have an aperture for receiving a top portion of the article.

Preferably, the handle aperture may be formed in the tubular body portion at a position above the recessed end wall structure.

More preferably, a second handle panel may be formed in the tubular body at a position above the recessed end wall structure and opposed the first aperture.

- 3 -

A second aspect of the invention provides a carton having a tubular body formed of first and second opposed walls interconnected by third and fourth walls and an end wall formed of at least three end flaps, one of the end flaps having a locking tab that engages the other flaps to secure all the flaps together, said one flap is connected to the first wall, the other flaps include
5 flaps connected respectively to the second and third walls. Preferably, the other flaps further include a flap connected to the fourth wall.

A third aspect of the present invention provides a blank having a plurality of side panels hinged together in series for forming a tubular structure and an end wall arrangement
10 comprising at least three end flaps hingedly connected to corresponding side panels wherein one of the flaps is provided with a locking means to engage the other flaps, thereby to secure the flaps together when in a set up condition. Preferably, the locking means may comprise a tab extending from the end edge of said first flap and an aperture formed in the opposing flap.

15 According to an optional feature of the second aspect of the invention, the locking means may further comprise a tongue extending from a side edge of the first flap and the adjacent flap is formed with a notch or opening adapted to receive the tongue when in a set up carton.

20 Preferably, the locking means further comprises a second tongue extending from a side edge of said first flap for engagement with an adjacent wall panel and wherein the said adjacent wall panel is formed with a notch or opening to receive the tongue.

25 According to another optional feature of the second aspect of the invention, each flap may comprise a reinforcing panel folded to be disposed on the inside surface of the corresponding side panels.

According to a further optional feature of the second aspect of the present invention the or each end flaps may have one or more apertures for receiving a top portion of an article in a set up carton.

- 4 -

According to a yet farther optional feature of the second aspect of the present invention, a handle aperture may be formed in the end flap.

A fourth aspect of the invention provides a blank for forming a carton having a tubular body formed of first and second opposed wall panels interconnected by third and fourth wall panels and an end wall formed of at least three end flaps, one of the end flaps having a locking tab that engages the other flaps to secure all the flaps together in a set-up condition, said one flap is connected to the first wall panel, the other flaps include flaps connected respectively to the second and third wall panels.

Preferably, the other flaps further include a flap connected to the fourth wall panel.

Brief Description of the Drawings

Exemplary embodiments of the invention will now be described, by way of example only, with reference to the accompanying drawings in which:

FIGURE 1 illustrates a blank for forming a carton according to one embodiment of the invention;

FIGURES 2, 3, 4, 5, 6 and 7 illustrate the construction of an end wall arrangement of the blank shown in Figure 1;

FIGURE 8 illustrates the carton in a partially set-up condition with the end wall arrangement constructed;

FIGURE 9 is a perspective view from below illustrating the end wall arrangement in a set-up condition, and

FIGURE 10 illustrates the carton in a set-up and loaded condition.

Detailed Description of the Preferred Embodiments

Referring to the drawings, and in particular Figure 1, there is shown an embodiment of a unitary blank for forming a carton made from paperboard or similar foldable sheet material.

5 It is envisaged that two or more blanks could be used instead without departing from the scope of the invention. It is envisaged that the carton is a fully enclosed type, although it will be recognized that the invention could be applied to a wraparound type carton or top gripping clip without departing from the scope of the invention.

10 Turning to Figure 1, the blank 10 comprises a first side wall panel 12, a second side wall panel 14, a third side wall panel 16 and a fourth side wall panel 18 hingedly connected one to the next in series along fold lines 20, 22 and 24 respectively.

In use, the first, second, third and fourth side wall panels are secured together to form a
15 tubular structure, by suitable securing means known in the art. In this embodiment, the securing means is provided by a securing flap 34 hingedly connected to the first side wall panel 12 along fold line 36. In those embodiments with a recessed end wall structure, securing flap 35 is also hingedly connected to securing flap 34 along fold line 37.

20 One end of the tubular structure is provided with a base panel arrangement for closing that end, in which there comprises a first base panel 26 hingedly connected to the third side wall panel 16 along fold line 28 and a second base wall panel 30 hingedly connected to the first side wall panel 12 along fold line 32.

25 There further comprises an end closure arrangement which is provided by three or more end flaps. In this embodiment, there comprises four end flaps 80, 84, 88 and 92; each end flap is hingedly connected to a corresponding side wall panel. Therefore, end flap 80 is hingedly connected to first side wall panel 12 along fold line 44; second end flap 84 is hingedly connected to second side wall panel 14 along fold line 48; third end flap 88 is hingedly
30 connected to third side wall panel 16 along fold line 40; and fourth end flap 92 is hingedly connected to fourth side wall panel 18 along fold line 52.

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One of the end flaps 80 is provided with locking means to engage the other flaps, thereby to secure them together. It can be seen from Figure 1 that the locking means comprises a locking tab 100 extending from first end flap 80. In this embodiment, it is hingedly
5 connected thereto along fold line 102 and extending outwardly beyond its end edge. A corresponding locking aperture 98 is struck from third end flap 83 proximate the end edge of end flap 83. In some embodiments, aperture 98 further comprises opposed cut lines which cause the outer parts of aperture to flex when the locking tab passes through it in order to reduce the likelihood of locking tab 100 deforming during the engagement process.

10 Locking tab 100 is preferably 'arrowhead' in shape with a shoulder portion of an increased width and a neck portion of a reduced width so as to define a pair of recesses 101, 103, illustrated in Figure 1. In use, the recesses 101, 103 engage the end edges of the second and fourth flaps 84, 92 as shown in Figure 2, thereby to secure all the flaps in a substantially face
15 connecting relationship, described in more detail below.

In one class of embodiments, the or each end flap further comprises one or more openings 96, for receiving an upper portion of an article, for example a bottle.

20 Preferably, the end closure arrangement is recessed below the upper edges of the side wall panels 12, 14, 16, 18 to create a carton that reveals an upper portion of the bottles whilst providing a support structure to the bottles. Also, the bottle tops are positioned below the upper edges of the carton to protect them in transit. In order to achieve this, each of the end flaps are provided with a reinforcing panel to hingedly interconnect the side wall panels to the
25 end flaps. Therefore, in this embodiment, there is provided a reinforcing panel 42, hingedly interconnecting end flap 80 to first side wall panel 12 along fold lines 82 and 44 respectively. Similarly, reinforcing panels 46, 38 and 50 are provided to hingedly interconnect end flaps 84, 83 and 92 to side wall panels 14, 16 and 18 respectively along fold lines 86 and 48; 90 and 40, and 94 and 32.

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In these embodiments with a recessed end wall structure, the upper end flap 80 is provided with a tongue 108 extending from a side edge for engagement with a notch or opening 106 formed, at least in part, in the reinforcing panel 46. Preferably, there further comprises a second tongue 110, protruding from the opposing side edge of end flap 80 and adapted to be engaged with a second notch 104 struck from at least part of reinforcing panel 50.

In these embodiments where the end closure arrangement is recessed, it is possible to provide one or more handle panels positioned above the end wall arrangement. Thus, in this embodiment, there comprises a hand aperture 72a struck from the reinforcing panel 42 and a corresponding hand aperture 70a struck from an upper portion of side panel 12. In use, hand apertures 70a and 72a are aligned. There may further comprise tabs 74a and 76a extending into the corresponding apertures 70a, 72a and foldable to improve comfort of the user. Fold lines 78a allow the tab to flex. Similar hand apertures 70b, 72b; 70c, 72c and 70d, 72d may be provided in the other walls of the carton which are struck from corresponding reinforcing panels 46, 52 and 50 and side wall panels 14, 16 and 18.

The reinforcing panels 42, 46, 52, 50 may be hingedly connected together along fold lines 54, 56 and 58 respectively and in which case there may also comprise a slot S to aid the folding process.

Turning to the construction of the carton from the carton blank as illustrated in Figure 1, each blank requires a series of sequential folding and gluing operations which are preferably performed in a straight line machine, so that the carton and/or blank are not required to be rotated or inverted to complete its construction. The folding process is not limited to that described below and can be altered according to particular manufacturing requirements.

The first stage is to form the end wall arrangement by which the end flaps 80, 84, 83 and 92 are folded inwardly in direction X (Figure 2) into face contacting arrangement with corresponding side wall panels 12, 14, 16 and 18 respectively. Reinforcing panels 42, 46, 52 and 50 are folded over into face contacting arrangement with the corresponding side wall panels along fold lines 44, 48, 49 and 52 respectively, as shown in Figure 2. Optionally, the

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reinforcing panels are secured to the side wall panels by glue C (shown in hatching) or other means known in the art so that the hand apertures 70, 72 are brought into alignment, as shown in Figure 3.

5 The end flaps 80, 84, 88 and 92 are then folded about fold lines 82, 86, 90 and 94 in an upward direction Y shown in Figure 4.

Of course, in those embodiments without reinforcing panels, then the construction process would correspond to the next section only.

10

The tubular structure of the carton is formed whereby the side wall panels 12 and 18 are folded inwardly towards each other with side wall panel 16 placed in face contacting arrangement with securing flaps 34 and 35 and is secured thereto by glue or other securing means known in the art, so that the carton is in a flat collapsed condition as shown in Figure 5
15 ready to be supplied to the end user.

The tubular structure is then formed by separating the side wall panels 12, 14, 16 and 18 and the end wall arrangement is constructed as shown in Figures 6, 7 and 8. In some embodiments the articles are loaded before forming the end wall arrangement, although in
20 this embodiment, the end wall is formed first and then the bottles are loaded from below.

The end flaps 84 and 92 are folded downwardly along fold lines 86 and 94 and then end flap 88 with locking aperture 98 is folded downwardly into face contacting arrangement with end flaps 84 and 92. Finally, end flap 80 is folded downwardly along fold line 82, as shown in
25 Figure 7. At this point, the article openings 96 are in alignment so the articles can be loaded from below and into the openings 96. One advantage is that the end flaps are then held in position as they are secured together, described in more detail below.

The end flaps are secured together by punching the locking tab 100 through the locking aperture 98 so that the carton is in a position as shown in Figure 8. Preferably, the shoulders of the locking tab 100 pass beyond the end flaps 84 and 92 to engage the undersides of the
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end flaps 84 and 92 so that the end edges of these flaps 84, 92 are received in the recesses 101 and 103 as shown in Figure 9. Thus, the locking means of the upper flap engages the other flaps, thereby to secure all the flaps together.

5 In those embodiments with the or each tongue 108, 110, they are engaged in the notches 106, 104 respectively, as shown in Figure 7.

Finally, if the articles B have not yet been loaded then this is done and the base panels 26 and 30 are folded inwardly about fold lines 28 and 32 respectively and secured together in
10 overlapping arrangement, by glue or other means known to the art. Thus, the carton is in a set up and loaded condition ready to be supplied to an end user, as shown in Figure 10.

In order to gain access to the articles, the upper end flap 80 is pulled in an upward direction so that the locking tab 100 is disengaged from the other flap and/ or the notches. This action
15 releases the other flaps so that they can be folded in an upward direction to reveal the articles. To release the access structure then the process is reversed.

The present invention and its preferred embodiment relate to an arrangement for providing a
20 releasable access structure in a fully enclosed carton. However, it is anticipated that the invention can be applied to a variety of carriers and is not limited to those of the fully enclosed type hereinbefore described and could be used for numerous applications for example a wrap-around carton.

It will be recognized that as used herein, directional references such as "top", "base", "end",
25 "side", "inner", "outer", "upper" and "lower" do not limit the respective panels to such orientation, but merely serve to distinguish these panels from one another. Any reference to hinged connection should not be construed as necessarily referring to a single fold line only; indeed it is envisaged that hinged connection can be formed from one or more of one of the following, a score line, a frangible line or a fold line, without departing from the scope of
30 invention.

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It should be understood that various changes may be made within the scope of the present invention, for example, the size and shape of the panels and apertures may be adjusted to accommodate articles of differing size or shape, alternative top and base closure structures may be used. The carton may accommodate more than one article in different arrays. Furthermore, in those embodiments employing a locking means with the or each tongue 108, 110 and corresponding notch 106, 104, it is not necessary for the locking function provided by recesses 101, 103 to be incorporated in the invention and vice versa.

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CLAIMS

1. A carton including first, second, third and fourth wall panels for forming a tubular structure and an end wall arrangement for closing one end of the tubular structure, the first and third wall panels being opposed to each other, the second and fourth wall panel being opposed to each other, the end wall arrangement comprising first, second and third end flaps hingedly connected to the first, second and third wall panels respectively, wherein the first end flap comprises locking means for engagement at least with the second and third end flaps to secure the first, second and third flaps together.
2. A carton as claimed in claim 1 wherein the locking means comprises a rib extending from an end edge of said first end flap to be received in a locking aperture in the third end flap.
3. A carton as claimed in claim 2 wherein the locking means further comprises a first tongue extending from a side edge of said first flap for engagement with one of the second and fourth wall panels, and wherein the said one wall panel is formed with a notch or opening to receive the first tongue.
4. A carton as claimed in claim 3 wherein the locking means further comprises a second tongue extending from a side edge of said first flap for engagement with the other of the second and fourth wall panels, and wherein the said other wall panel is formed with a notch or opening to receive the second tongue.
5. A carton as claimed in claim 3 or claim 4 wherein the tubular structure has a vertical tubular body, and the end wall arrangement is recessed.
6. A carton as claimed in claim 5 wherein each of the second and fourth wall panels comprises a panel body and a reinforcing panel foldably connected to the panel body, the reinforcing panel being folded to be disposed on an inside surface of the panel body, and wherein the reinforcing panel is formed with said notch or opening.

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7. A carton as claimed in claim 5 or claim 6 wherein the recessed end wall arrangement has an opening for receiving a top portion of the article.

8. A carton as claimed in claim 7 wherein a first handle aperture is formed in the tubular structure at a position above the recessed end wall arrangement.

9. A carton as claimed in claim 8 wherein a second handle aperture is formed in the tubular structure at a position above the recessed end wall arrangement and opposing the first handle aperture.

10. A carton as claimed in claim 2 wherein the tab has a shoulder for engagement with an underside of the second end flap,

11. A carton having a tubular body comprising first and third opposed walls interconnected by second and fourth walls and an end wall comprising first, second and third end flaps, the first end flap having a locking tab that engages the second and third end flaps to secure the first, second and third end flaps together, said first, second and third end flaps being connected to the first, second and third walls respectively, the locking tab being disposed in a locking aperture in the third end flap and in engagement with an underside of the second end flap.

12. A carton as claimed in claim 11 wherein the end wall further comprises a fourth end flap connected to the fourth wall.

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13. A blank including first, second, third and fourth side panels hinged together in series for forming a tubular structure and an end wall arrangement comprising first, second and third end flaps hingedly connected to the first, second and third side panels respectively, wherein the first end flap is provided with locking means for engagement at least with the second and third end flaps to secure the first, second and third end flaps together in a set up condition.

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14. A blank as claimed in claim 13 wherein the locking means comprises a tab extending from an end edge of said first flap to be received in a locking aperture formed in the third end flap.

15. A blank as claimed in claim 14 wherein the locking means further comprises a first tongue extending from a side edge of said first end flap, and one of the second and fourth side panels is formed with a notch or opening for receiving the first tongue.

16. A carton as claimed in claim 15 wherein the locking means further comprises a second tongue extending from a side edge of said first end flap for engagement with the other of the second and fourth panels, and wherein the said other side panel is formed with a notch or opening for receiving the second tongue.

17. A blank as claimed in any of claims 13 to 16 wherein each of the second and fourth side panels comprises a panel body and a reinforcing panel foldably connected to the panel body, the reinforcing panel being folded to be disposed on an inside surface of the panel body in a set up carton.

18. A blank as claimed in any of claims 13 to 17 wherein each of the end flaps has one or more openings for receiving a top portion of an article in a set up carton.

19. A blank as claimed in any of claims 13 to 18 wherein a handle aperture is formed in at least one of the side panels.

20. A blank for forming a carton having a tubular structure comprising first and third opposed wall panels interconnected by second and fourth wall panels and an end wall comprising first, second and third end flaps, the first end flap having a locking tab that engages the second and third end flaps to secure the first, second and third end flaps together in a set up condition, said first, second and third end flaps being connected to the first, second and third wall panels respective.

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21. A blank as claimed in claim 20 wherein the end wall further comprises a fourth end flap connected to the fourth wall panel.

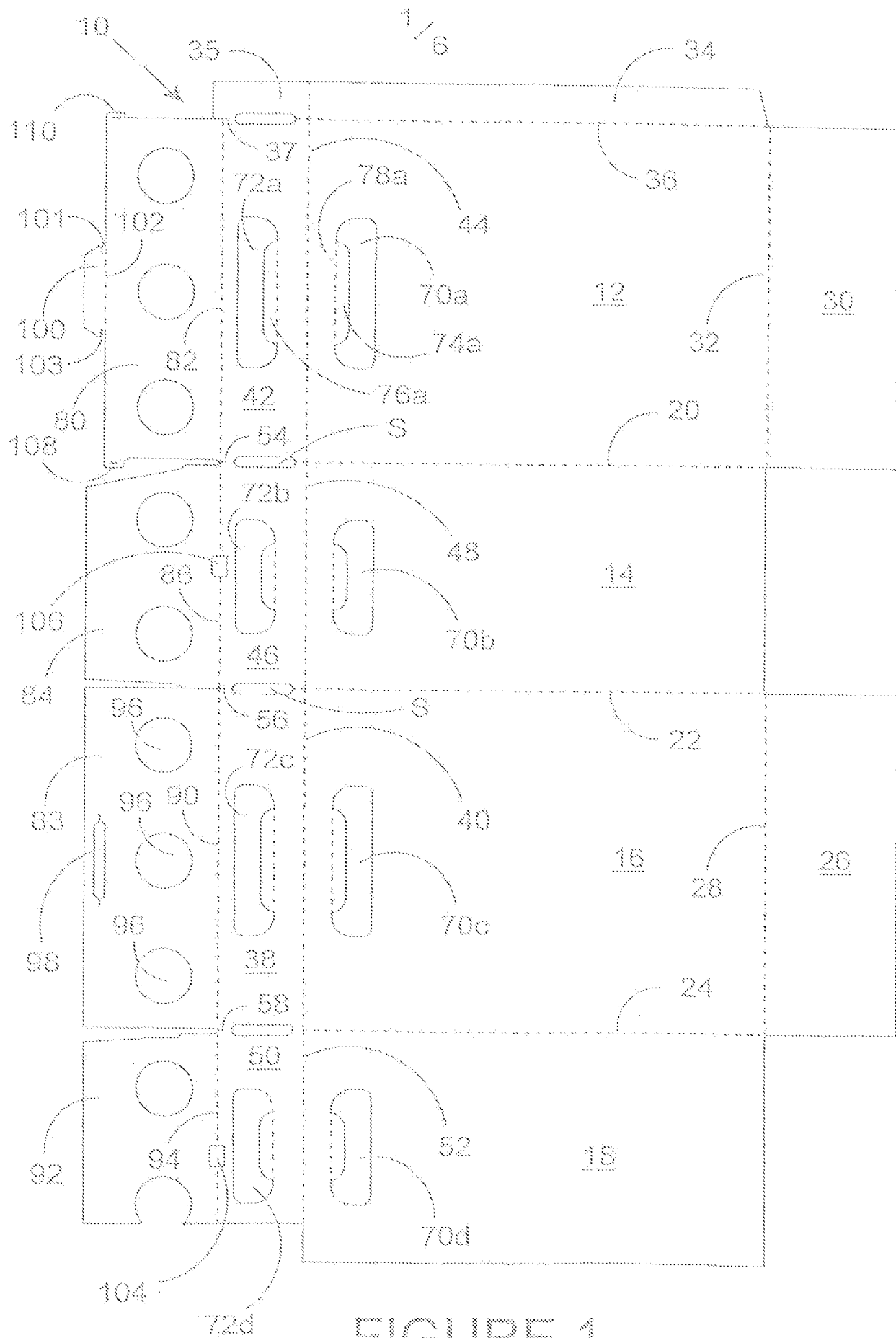


FIGURE 1

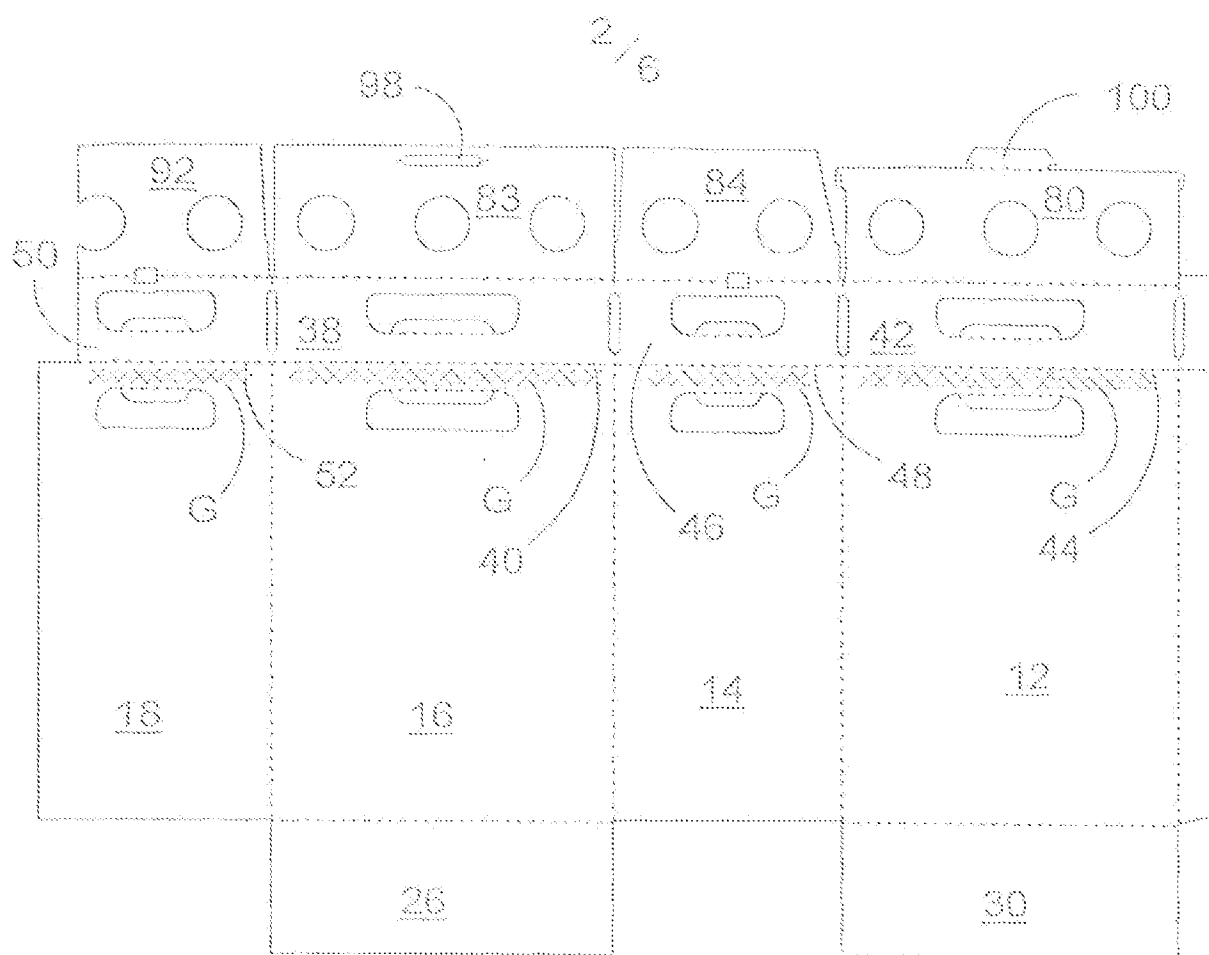


FIGURE 2

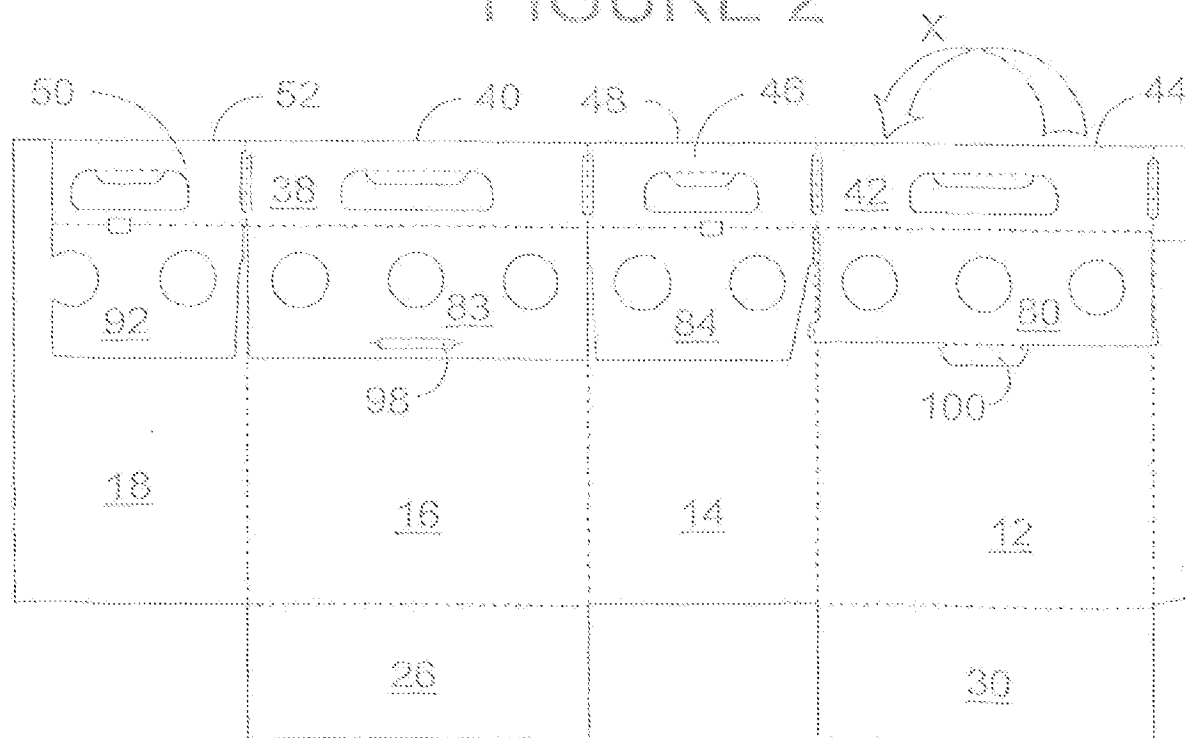


FIGURE 3

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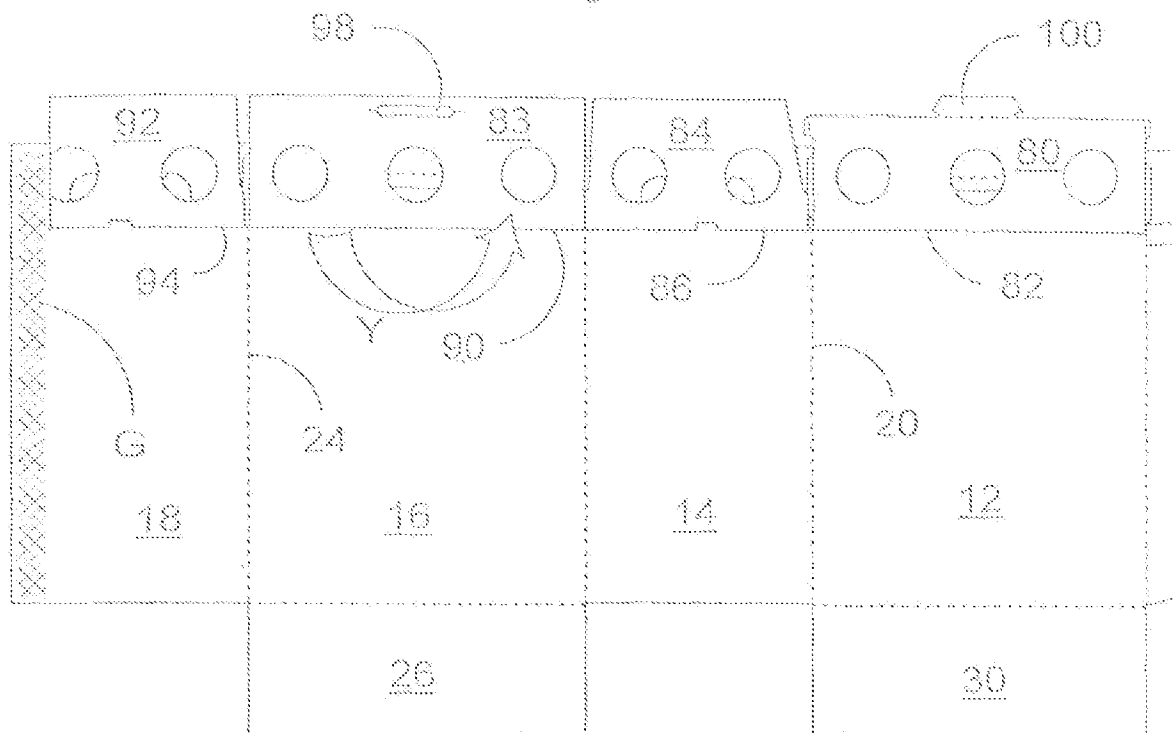


FIGURE 4

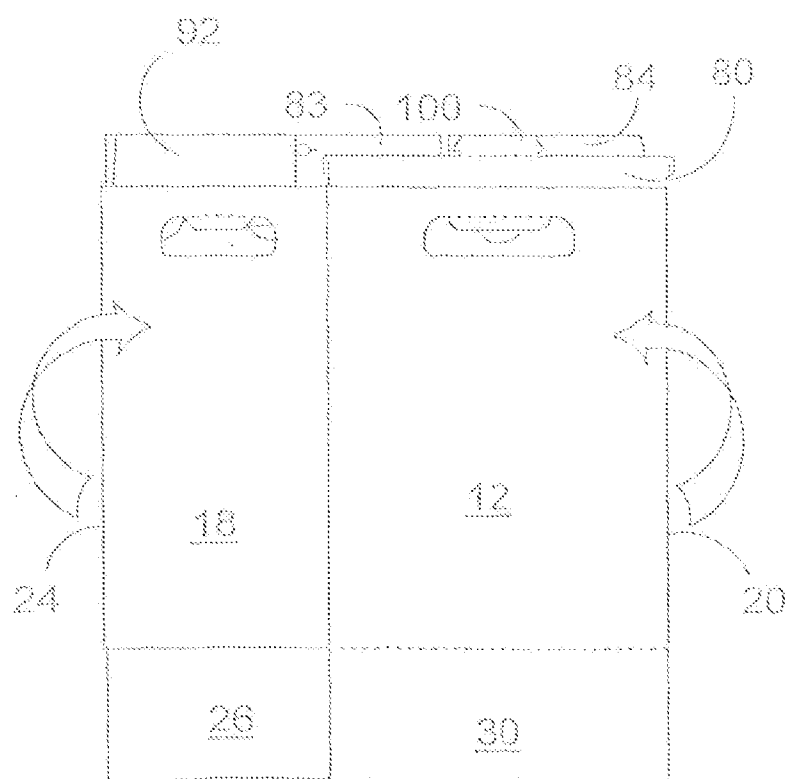


FIGURE 5

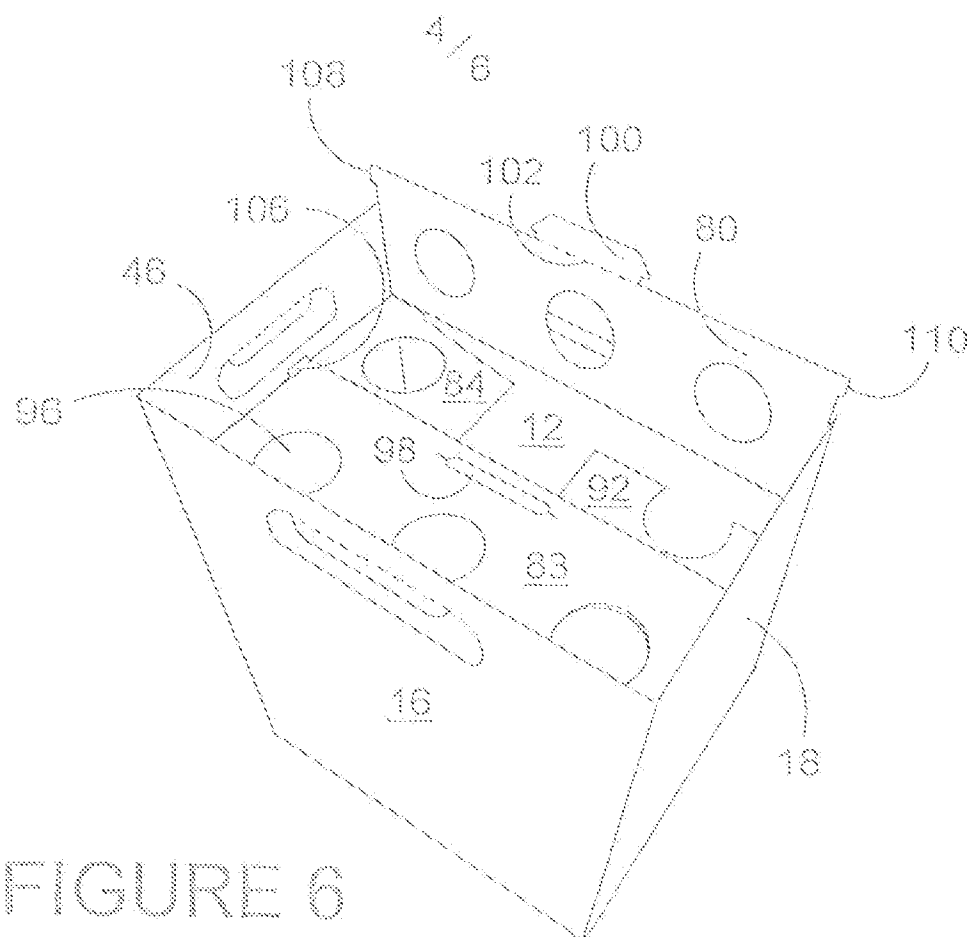


FIGURE 6

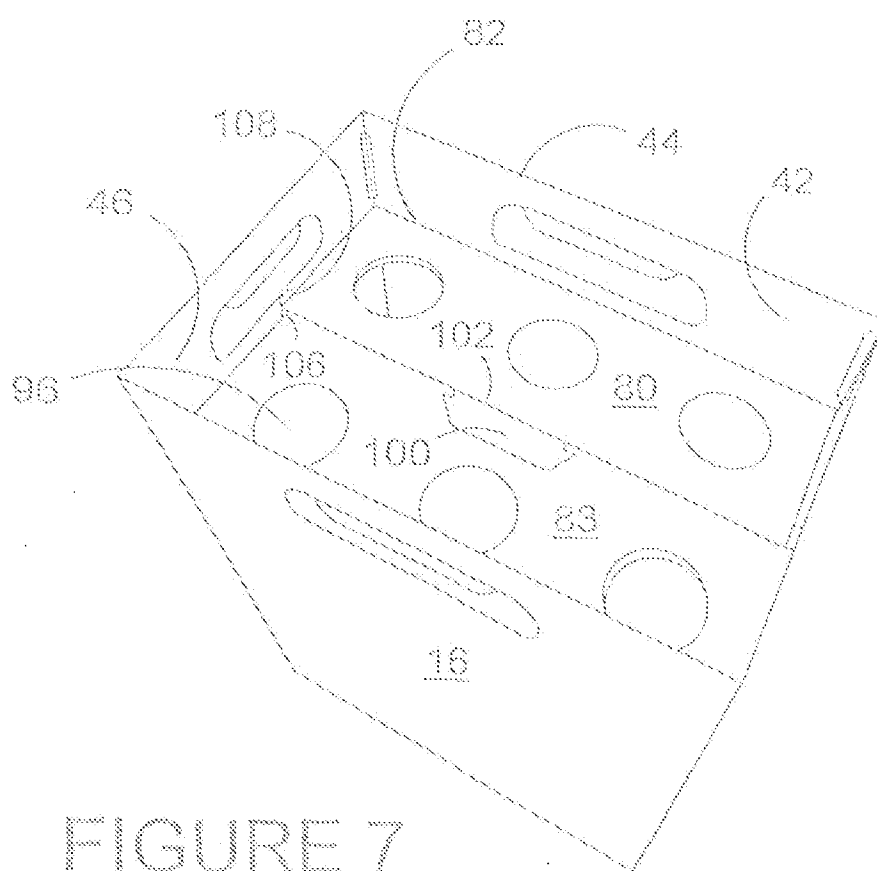


FIGURE 7

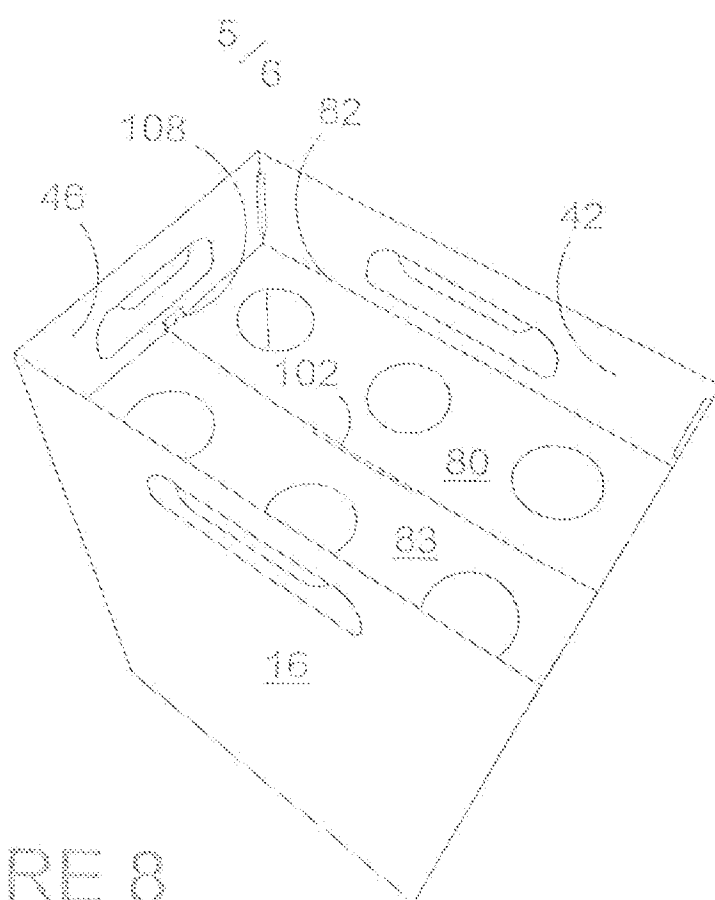


FIGURE 8

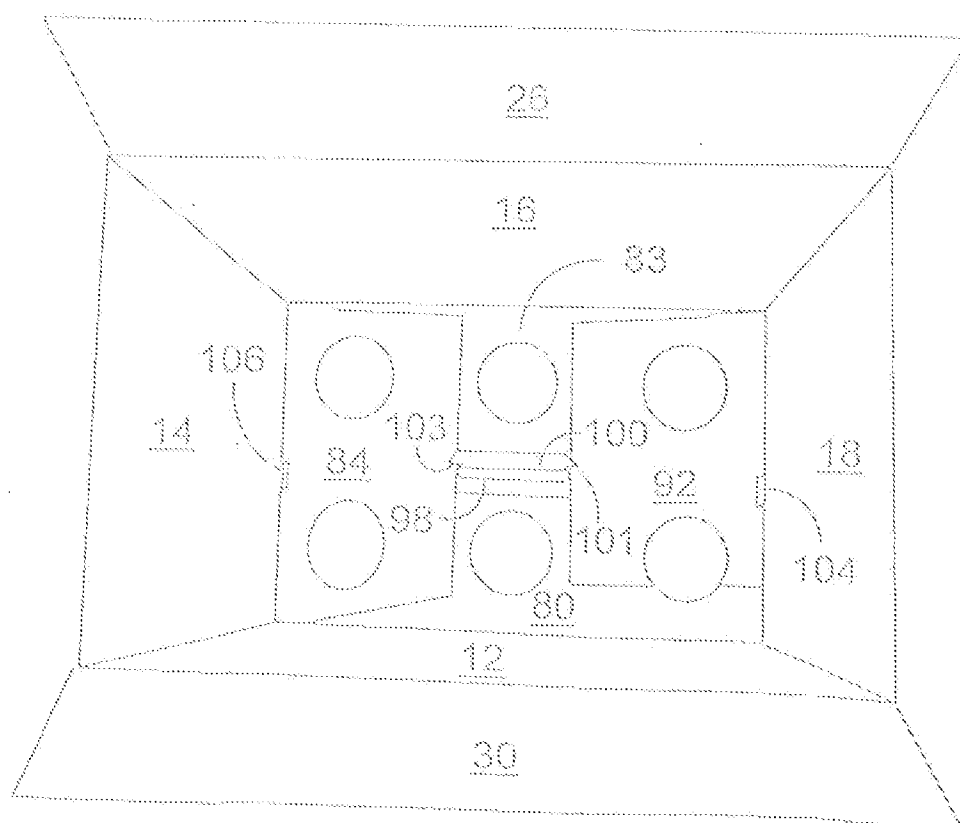


FIGURE 9

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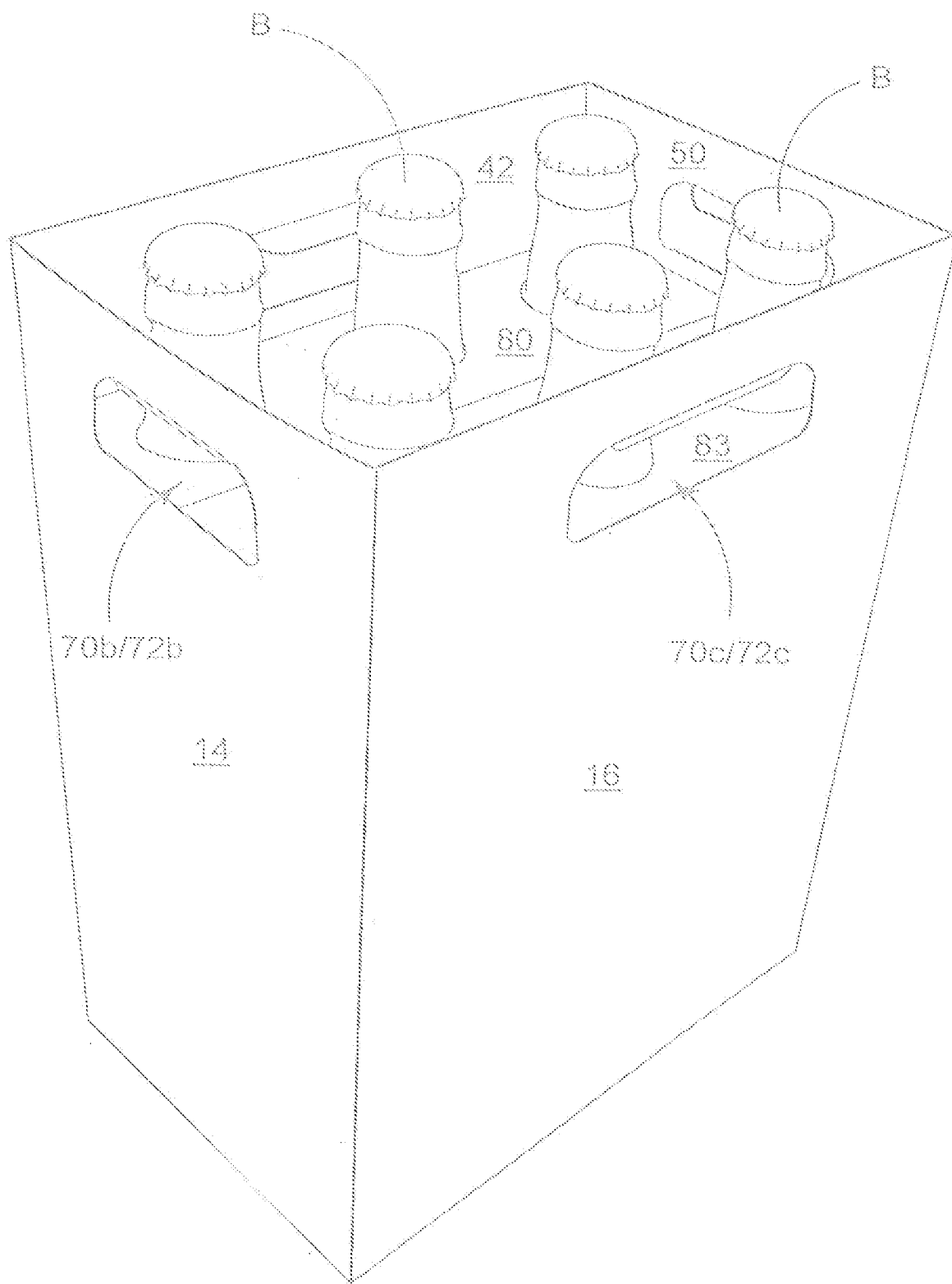


FIGURE 10

INTERNATIONAL SEARCH REPORT

International Application No.

PCT/US 05/04484

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 B65D5/02 B65D5/46 B65D71/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Multiple documentation searched (inventive step) system followed by classification (abstract)

IPC 7 B65D

Departmental search report of other than the responsible institution (if the applicant has such documents are included in the fields searched)

Multiple fast prior art conducted during the international search (name of data base and, where possible, search terms used)

EPO-internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Details of document, with abstract, where appropriate, of the relevant passages	Relevant claim(s)
X	US 3 403 639 A (FARQUHAR MELVILLE T) 1 October 1968 (1968-10-01)	1, 2, 10-14, 20, 21
Y	column 4, line 57 - column 6, line 46; figures 5-8	3-6, 8, 9, 15-19
Y	68 2 077 703 A (DOLAN CORRUGATED CONTAINERS LTD) 23 December 1981 (1981-12-23) page 1, line 78 - page 2, line 38; figures 1-5	3-6, 8, 9, 15-19
A	US 3 827 550 A (ARNESON E) 6 August 1974 (1974-08-06) column 4, line 44 - line 68; figures 7, 8	3, 7, 16



Further documents are listed in the continuation of page C.



Patent family members are listed in annex.

* Special categories of cited documents

(a) document defining the general aspect(s) of which (s) of the invention is/are considered to be of particular relevance

(b) prior document(s) but publication or date of the international filing date

(c) document which may involve features or priority claim(s) or which is cited to establish the general aspect(s) of the invention or other special aspect(s) or (s) of the invention

(d) document referring to an oral disclosure, use, exhibition or other means

(e) document published prior to the international filing date but later than the priority date (date)

(f) non-patent document published after the international filing date or priority date and not connected with the application but cited to exemplify the principle of priority underlying the invention

(g) document of non-patent literature, the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

(h) document of non-patent literature, the claimed invention cannot be considered to involve an inventive step when the document is taken alone with one or more other such documents, such combination being obvious to a person skilled in the art

(i) document of non-patent literature, the claimed invention cannot be considered to involve an inventive step when the document is taken alone with one or more other such documents, such combination being obvious to a person skilled in the art

Date of the actual completion of the international search

20 May 2003

Date of making of the international search report

30/05/2003

Name and mailing address of the ISA

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Tel. +32-2-745 34-0000, 71 81 01 00 00

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International Publication No.

PCT/US 03/04434

Patent document cited in search report	Publication data	Patent family member(s)	Publication date
US 3403239	A	01-10-1968	NONE
GB 2077703	A	23-12-1981	NONE
US 3327550	A	06-08-1974	NONE
US 3822322	A	09-07-1974	NONE